

# Index to Mechanical Engineering

Volume 61, January—December, 1939

(A) denotes Briefing the Record; (BR), Book Review; (C), Correspondence; (Ed), Editorial

ACCIDENTS. <i>See</i> Safety.	
ADHESION	
Coefficient of, on rails.....	583
ADHESIVES, INDUSTRIAL (A).....	467
ADKINS, W. K.	
Industrial-evaporator design, application, and operation (C).....	241
AERONAUTICS. <i>See also</i> Aviation.	
Progress report of Aeronautic Division...	150
Research in (Ed).....	106
AERONAUTICS AND NATIONAL DEFENSE....	523
AIR	
Sampling impurities in (A).....	468
AIR BRAKES	
Brake-system development.....	583, 657
AIR CONDITIONING	
Conference on.....	769
Effects of, on the body.....	9
Physiological response to (abstract).....	141
Systems using calcium chloride (A).....	613
Texas A. & M. gives course.....	772
Windowless factory (A).....	615
AIR HYGIENE FOUNDATION	
Sampling air impurities (A).....	468
AIR LINES	
Transoceanic.....	154
AIR NAVIGATION	
Instrument aids to.....	154
AIR PREHEATERS	
Ljungstrom type.....	507
Use of, for burning wood waste.....	118
AIR PROPELLERS	
Made of wood and plastic (A).....	232
AIR TRANSPORT	
Developments in 1938.....	153
AIRCRAFT. <i>See also</i> Airplanes, Helicopters.	
Aeronautical research (Ed).....	106
Aeronautics and national defense.....	523
AIRCRAFT ACCIDENTS (A).....	471
AIRCRAFT CONFERENCE, N.A.C.A.	
Report of.....	492
AIRCRAFT ENGINES. <i>See</i> Engines.	
AIRCRAFT INSTRUMENTS	
Aids to navigation.....	154
Automatic direction finder (A).....	229
Flightray (A).....	230
AIRPLANE ENGINES. <i>See</i> Engines.	
AIRPLANES	
Developments in design in 1938.....	151
Duralum used for (A).....	546
Floating-lift airplane (A).....	921
Rules relaxed for export of military planes	944
Tailless monoplane (A).....	390
Transatlantic air transport with particu-	876
lar reference to flying boats (abstract).....	274
Value of, as military weapons.....	274
AIRPORTS	
La Guardia Field (A).....	917
ALCOA	
Light-reflecting material (A).....	389
ALFORD, L. P.	
Design and shop practice (BR).....	79
Science of production organization (BR).....	172
ALLEN, HERBERT	
Control equipment for high-pressure oil and gas wells.....	725
ALLOYS	
Use of, in cast iron.....	457
ALNICO	
Use of, in flowmeters.....	20
ALSFILM	
New transparent film material (A).....	384
ALXAK PROCESS	
For aluminum reflectors.....	139
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE	
Annual winter convention.....	155
AMERICAN ASSOCIATION OF SCIENCE WORKERS	
Founding of.....	155
AMERICAN CONFERENCE ON NATIONAL DEFENSE	
Meeting of.....	381
AMERICAN COORDINATING COMMITTEE ON CORROSION.....	336

ISSUE	PAGE NUMBERS
January	1-102
February	103-190
March	191-268
April	269-342
May	343-424
June	425-498
July	499-570
August	571-640
September	641-704
October	705-776
November	777-858
December	859-948

  

AMERICAN COUNCIL OF COMMERCIAL LABORATORIES.....	337
AMERICAN DOCUMENTATION INSTITUTE	
Assistance for subscribers to European scientific journals.....	942
AMERICAN ENGINEERING COUNCIL	
Annual assembly (1939).....	84, 176
Annual assembly (1940).....	943
Council reaffirms faith in.....	90
Discussion function initiated.....	60
Focus of engineering professional spirit.....	198
National legislation affecting engineers.....	263
News from Washington and elsewhere.....	943
...263, 338, 419, 494, 565, 699, 774,	
Patent inquiry of. <i>See</i> Patent Inquiry.	700
Proceedings of forums available.....	105
Professional ideal (Ed).....	105
AMERICAN FOUNDRYMEN'S ASSOCIATION	
Plans.....	337
AMERICAN GAS ASSOCIATION	
Report on gas-engine power (A).....	36
AMERICAN GEAR MANUFACTURERS ASSOCIATION	
Annual meeting.....	337
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS	
Officers nominated.....	264
AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS	
Annual meeting.....	311
AMERICAN INSTITUTE OF PHYSICS	
Temperature symposium.....	253, 562, 845
AMERICAN SOCIETY FOR TESTING MATERIALS	
Change in methods of publishing standards.....	565
Columbus meeting.....	264
Index of standards available.....	336
Issues specifications for H-T and H-P piping.....	700
President H. H. Morgan installed.....	694
Correction.....	772
AMERICAN SOCIETY OF CIVIL ENGINEERS	
Officers installed.....	264
AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS	
Notes.....	337
AMERICAN SOCIETY OF MECHANICAL ENGINEERS	
A.S.M.E. today (Ed).....	707
I. Major objectives.....	745
II. Administration.....	825
Applied Mechanics Division	
Meeting, Columbia University 336, 411,	561
Awards of. <i>See</i> Honors and Awards.	
Boiler Code of. <i>See</i> Boiler Code.	
Boiler Code Committee	
Cooperative work of (address).....	595
Budget for 1939-1940.....	635
Candidates for membership.....	102, 190, 268, 342, 424, 498, 570, 640, 704, 776, 858, 948
Codes of. <i>See</i> Codes.	
Committee appointments.....	633
Committee reports for 1918.....	63
Committees, roster of (Ed).....	193

## AMERICAN SOCIETY OF MECHANICAL ENGINEERS (continued)

Constitutional amendments approved....	944
Council	
Meeting (December, 1938).....	41, 88
New members for 1939.....	42
Report for 1938.....	59
Report on recommendations of Local Sections national delegates. (Ed) 428,	485
Council Executive Committee	
Actions of.....	181, 560, 633
Authorizes committee on depreciation.....	181
Design committee, a correction.....	186
Finance Committee report (1938).....	66
Summary.....	69
Fuels Division	
Joint meeting with A.I.M.E., Colum-	
bus, Ohio.....	491, 695, 765, 848
Service to members broadened.....	253
Will supply speakers to Sections.....	180
Heat Transfer Group	
Organizes committees.....	253
Honorary Members	
Selection procedure.....	89
Honors of. <i>See</i> Honors and Awards.	
Hydraulic Division	
Part in Hydrologic Union meeting....	628
Interview facilities for members.....	424
Junior Members	
Activities.....	94, 181, 257, 331, 414, 490, 697, 769, 850, 938
Objectives of Metropolitan group (C)...	478
Local Sections	
By-laws amended.....	91
Group conferences.....	768
Group Delegates Conference.....	43
Group delegates headed..... (Ed) 428,	485
News of.....	85, 179, 255, 329, 412, 488, 936
Philadelphia Section sponsors coopera-	
tion between army and manufacturers	85
Publicity for.....	849
Local Sections Committee	
Recommendations to Council.....	84
Machine Shop Practice Division	
Cleveland meeting.....	696, 764
Notes.....	336
Management Division	
Advisory committee formed.....	564
Cosponsor of Stevens economics con-	
ference.....	253
Coordinates in management conference.	633
Objectives formulated.....	561, 633
Mid-Continent secretary of.....	633
National Defense Group	
Takes interest poll.....	493
Map of Sections, Branches, and Groups..	62
Materials Handling Division notes.....	336
Medals of. <i>See</i> Honors and Awards.	
Meetings, National	
Annual Meeting (1938).....	40
Movies of, available.....	180
Annual Meeting (1939), Philadelphia.....	762, 841, 931
Fall Meeting (1939). <i>See</i> British	
American Engineering Congress.	
Semi-Annual Meeting (1939), San	
Francisco.....	252, 328, 407, 479, 558, 634
Spring Meeting (1939), New Orleans...	82, 174, 325
Meetings, Sections.....	254, 255, 327, 329, 486, 768, 849
Members, deaths reported.....	102
190, 268, 342, 498, 570, 704, 776, 858,	948
Membership List	
1940 edition to have two new features.	854
Membership statistics.....	61
Nominating committee	
Solicits suggestions.....	178
Will be in session at Annual Meeting...	944
Officers for 1940.....	561, 629, 848
Oil and Gas Power Division	
National meeting at Ann Arbor...410,	626
Proceedings available.....	942
Parker case.....	61, 181, 847
Petroleum Division	
Meeting at Norman, Okla.....	764, 942
Notes.....	336
Overton, W. J., appointed secretary...	942
Prizes of. <i>See</i> Honors and Awards.	
Professional Divisions	
Conference at Annual Meeting.....	44
Conference of representatives.....	491
Members may join.....	336
Publications	
"Back talk" (C).....	622

# AMERICAN SOCIETY OF MECHANICAL ENGINEERS (continued) Publications (continued)

For and against (C).....	759
Handling of technical papers (Ed).....	501
Opinions asked on economic reviews.....	493
Preprints of papers (Ed).....	501
Regulation Group meets.....	561
San Francisco tour.....	252, 408, 636
Sixtieth Anniversary plans.....	84
Student Branches	
Activities and news.....	939
94, 182, 258, 332, 415, 698, 770, 851, 939	
Student Group meetings (1939).....	771
Student Guidance Committee work.....	772
Textile Division notes.....	336, 410, 412
Tour to San Francisco.....	252, 408, 636
Wood Industries Division	
Bibliography available on machining of wood.....	696
National meeting in Boston.....	693, 764, 934
A.S.M.E. BOILER CODE. See Boiler Code.	
A.S.M.E. MECHANICAL CATALOG AND DIRECTORY	
1940 edition out.....	764
A.S.M.E. NEWS.....	82, 174, 252, 325, 407, 479, 558, 625, 690, 762, 841, 931
A.S.M.E. WOMAN'S AUXILIARY	
News of.....	262, 336, 493, 562, 692
Report of.....	90
Rice scholarships established.....	935
Scholarship-fund party.....	856
Student loans.....	493
AMERICAN SOCIETY OF REFRIGERATING ENGINEERS	
Annual meeting (1940).....	944
AMERICAN STANDARDS ASSOCIATION	
Advisory committee formed.....	628
Index of standards available.....	419
Officers elected.....	97
Pipe, new standard for (A).....	33
Standards for vegetables (A).....	39
AMERICAN SYSTEM	
Whichever way (Ed).....	345
AMES, JOSEPH S.	
Presented with N.A.C.A. testimonial (A).....	917
AMBRO, GOSTA A.	
Which fuel to choose?.....	804
ANTHONY, GARDNER CHACE	
Bas-relief of, unveiled.....	383
ANTHRACITE CONFERENCE	
Second, at Lehigh University.....	264
ANTIMONOPOLY INVESTIGATION. See Temporary National Economic Committee.	
APPRENTICESHIP	
Cost of (C).....	394
ARENSBERG, CONRAD M.	
Mechanics of human organization (BR).....	375
ARGENTINA	
Technical and economic aspects of.....	599
ARMOR PLATE	
Requirements of, for tanks.....	17
ARMSTRONG, FLOYD E.	
Extra-tariff control of foreign trade (BR).....	790
ARMY AVIATION	
Army Air Corps.....	678
ARMY ORDNANCE	
America looks to her guns.....	273
Development, status, and manufacture of tanks.....	13
High-explosive bombs (A).....	749
Place of Diesel engine in our national defense.....	799
U. S. semiautomatic rifle (A).....	235
AROCHE	
Liquid used in solar-heat devices (A).....	389
ASH, PULVERIZED-COAL. See Fly Ash.	
ASSOCIATION OF IRON AND STEEL ENGINEERS	
Pittsburgh meeting.....	696
ATOM SMASHERS	
Electrostatic generator and cyclotron (A).....	163
ATOMIC ENERGY	
Energy from matter (A).....	754
AUSTEMPERING. See Heat-Treatment.	
AUTOMOBILE DRIVING	
Danger units (A).....	385
AUTOMOBILE HEADLIGHTS	
Sealed-beam lamps (A).....	833
AUTOMOBILE SHOW (A).....	916
AUTOMOBILE SPEED RECORD (A).....	749
AUTOMOBILE TIRES	
Tread design, tests.....	125
AUTOMOBILES. See also Motor Vehicles.	
Hydra-matic transmission (A).....	922
Paint baking with infrared rays (A).....	468
Rear-engined Volkswagen (A).....	311
Rubber-tire clutch (A).....	918

## B

AUTOMOTIVE CONGRESS.....	328, 493, 542
AVIATION. See also Army Aviation.	
Pilots and airports in U. S. (A).....	681
AWARDS. See Honors and Awards.	
BABBITT CENTENARY.....	679
BAILEY, E. G.	
Power and fuel.....	581
BALL BEARINGS	
Machine-tool-spindle analysis.....	813
BALLESTER, RODOLFO E.	
Fifth Calvin W. Rice lecturer.....	559
Some technical and economic aspects of the Argentine.....	599
BARISH, THOMAS	
New method of machine-tool-spindle analysis.....	813
BARNES, C. A.	
Some aspects of combustion in small underfeed stokers (A).....	682
BARSTOW, WILLIAM S. Dinner in honor of.....	541
BARTH, CARL G. Death of.....	918
BARTOE, W. F.	
Service-temperature flow characteristics of thermoplastics.....	892
BEAN, HOWARD S.	
Influence of steam-flow metering equipment on piping design (C).....	537
BEARINGS. See also Ball Bearings.	
Lubrication of high-speed Diesels. Bearing strength, temperature relations, corrosion as a function of temperature.....	356
BEGEMAN, M. L.	
Hard-surfacing processes and materials (C).....	397
BENDS	
Use of helium for treatment of.....	112
BENSON BOILERS. See Boilers.	
BERRY, C. HAROLD	
Smoke-density measurements (C).....	71
BEST MEN ARE NEEDED (Ed).....	346
BIBLIOGRAPHIES	
Coal hydrogenation.....	611
Fournetron's writings.....	301
Frozen foods.....	442
Metal cutting.....	378
Rural industries.....	442
Stress, combined, effects of.....	111
Tests of materials under combined stresses.....	111
Timber construction.....	798
Wood.....	798
BIGNELL, L. G. E.	
Mid-Continent secretary of A.S.M.E.....	633
BLAKESLEE, H. R.	
Old mill wheel (C).....	321
BLAST FURNACES	
Blowers driven by gas turbines.....	649
BLUNT, J. G.	
Electric locomotives (C).....	472
BOCHET, MARCEL	
Internal-combustion-engine design in Europe.....	525
BOEHM, W. H.	
Honored by Boiler Code Committee.....	484
BOILER CODE	
Interpretations.....	78, 170, 250, 397, 623, 687, 838
Revisions and addenda.....	77, 170, 321, 398, 553, 930
Stainless steel in unfired pressure vessels.....	553
BOILER CONTROLS. See Controls.	
BOILER CORROSION	
In partially dry steam-generating tubes.....	199
BOILER EMBRITTLEMENT. See Water Conditioning.	
BOILER FURNACES	
Design trends.....	581
For combustion of wood waste.....	120
Photographic study of operation of.....	729
BOILER INSPECTION	
Measuring thickness of metal from one surface (A).....	231
BOILER INSURANCE (A).....	750
BOILER SCALE	
Sodium-aluminum-silicate scale.....	719
BOILER TUBES	
Corrosion in.....	199
Cracking of tube ends.....	715
Creep in tubular pressure vessels (C).....	757
Material for, in Benson boilers.....	221
BOILER-WATER TREATMENT. See Water Conditioning.	

BOILERS	
Benson boilers. Advantages of.....	294
Development of.....	217
On German ships.....	221
Typical installations of.....	287
Cleaning new boilers.....	718
Design trends.....	581
Die Dampfkessel (BR).....	247
Equipment for U. S. merchant marine.....	203
Locomotive with Velox boiler.....	867
Rotative boiler turbine (A).....	835
Solar-heat (A).....	388
Steamotive boiler.....	712
Wood-waste.....	120
BOOK REVIEWS	
An engineer's miscellany.....	172
Applied economics for engineers.....	928
By-products of E.C.P.D.....	912
Clash of progress and security.....	463
Debts and recovery.....	28
Die Dampfkessel.....	247
Economics of business enterprise.....	535
Engineering and civilization.....	323
Floor under wages: British style.....	676
Functions of the executive.....	375
Industrial price policies and economic progress.....	226, 392, (C) 394
Internal-combustion engine.....	402
Invisible tariff.....	790
Kent's mechanical engineers' handbook.....	79
Leadership in a free society.....	580
Medicolegal phases of occupational diseases.....	759
National Labor Relations Act.....	740
New Callendar steam tables.....	839
Present status and trends in engineering education in the United States.....	912
Promises men live by.....	27
Saving and investment in the American enterprise system.....	907
Science of production organization.....	172
Short history of the steam engine.....	323
Towards industrial peace in Australia.....	148
Trade associations in law and business.....	80
Uninvested savings.....	907
Vapor charts.....	840
BOOKS RECEIVED.....	81, 173, 248, 324, 402, 555, 623, 687, 760, 929
BRADBURY, T. A.	
Boiler-water treatment.....	142
BRAINS. No monopoly of (Ed).....	502
BRAKES	
Braking high-speed trains.....	583, 657
Canadian mine hoists.....	885
Regenerative braking (A).....	685
BRAY, CHARLES W. Fifty-Year Member.....	50
BRIDGMAN, P. W.	
Assistance to totalitarian states.....	309
Considerations on rupture under triaxial stress.....	107, (C) 477
BRITISH AMERICAN ENGINEERING CONGRESS.....	482, (Ed) 501, 563, 625, 690, 766
BRITISH VISIT US (Ed).....	501
BROOKS, J. ANSEL	
Scientific management in the small business.....	373
BROWN, DOUGLASS V.	
A floor under wages: British style (BR).....	676
BROWN, HYLTON R.	
Control of dust explosions in industrial plants (C).....	321
BROWN, LEWIS H.	
Presented with Vermilye Medal (A).....	917
BRUCE, A. K.	
Present position of heavy-oil and gas engines in Great Britain.....	429
BÜCHI, ALFRED J.	
Personal reflections on forty years of Diesel-engine development.....	213
BUILDING MATERIALS	
Cottrell block (C).....	476
Fellowship founded at Mellon Institute.....	264
Fly-ash concrete (C).....	475
Mineral wool (A).....	384
National Bureau of Standards bulletins on structural elements (A).....	166
BULLARD, J. E.	
Industry, labor, and the public (C).....	244
BUMGARDNER, H. E.	
Smoke-density measurements (C).....	71
BURCHARD, JOHN ELY	
Economic factors of housing problem.....	781
BURNERS. See Combination Burners, Domestic Furnaces, Oil Burners.	
BUSH, VANNEVAR	
The professional spirit in engineering.....	195
BUSINESS	
Economics of business enterprise (BR).....	535
BUTZLER, E. W.	
Industrial-evaporators (C).....	240
BYRNE, JOSEPH M., JR.	
Engineer in public service.....	742

## C

- CAIN, B. S.  
Design of Union Pacific steam-electric locomotive.....705,  
Electric locomotives (C).....474
- CAPITAL  
Government spending and economic recovery (BR).....307  
Required by jobs (A).....156
- CAPITAL GOODS  
And the American enterprise system (A).....381
- CAR WHEELS. *See* Wheels.
- CARBON DIOXIDE  
Dry ice from natural gas (A).....234  
Dry ice helps fit thrust collars.....681
- CARRY-OVER. *See* Steam Quality.
- CAST IRON  
Properties, alloys, heat-treatment, specifications, uses.....455
- CATAMARANS  
Twin ships (A).....310
- CEMENTED CARBIDES  
Brazing of (A).....388
- CEMENTS. *See* Adhesives.
- CENSUS OF MANUFACTURERS  
Value of products and persons employed by industries contributing to stream pollution.....360
- CENTRIFUGAL MACHINES  
Applications of (C).....758
- CHILLED CAR WHEELS. *See* Wheels.
- CHRISTIE, ALEXANDER GRAHAM  
Address before Metropolitan Section (A).....487  
Die Dampkessel (BR).....247  
Engineering, definition of.....156  
I.M.E. confers honorary membership on.....854  
More work for engineers (Ed).....3  
News notes of.....179, 254, 329, 330, 418, 486, 488, 633, 700, 844, 848, 854, 935, 938, 939, 941  
President, A.S.M.E.....2  
Smoke-density measurements (C).....72
- CHRISTMAS, JOHN K.  
Manufacture of high-speed tanks.....13
- CHRISTY, WILLIAM G.  
Smoke-density measurements (C).....72
- CHROMIUM  
Hard chromium plating (A).....830
- CIERVA, JUAN DE LA  
Memorial fellowship (Ed).....106
- CIRCUIT BREAKERS  
Quick-acting release latches.....807
- CIVIL AERONAUTICS AUTHORITY  
Aeronautical research (Ed).....106
- CIVIL SERVICE  
Federal public hearing on.....943  
National committee appointed.....263  
President's Committee appoints engineering committees.....566
- CLARK, DONALD S.  
Hard-surfacing processes and materials (C).....395
- CLOSE, GUY C., JR.  
Legible blueprints (C).....551
- CLUTCHES  
Rubber-tire clutch (A).....918
- COAL. *See also* Anthracite Conference.  
Analyses of the Pittsburgh bed.....609
- COAL, BITUMINOUS  
Downdraft conversion burner for domestic furnaces.....278  
Program of research on.....419
- COAL HYDROGENATION  
Bureau of Mines experimental plant.....605
- COAL-MINE SEALING  
Status of, in U. S.....363
- COAL MINES  
Industrial wastes.....364
- COAL TREATMENT  
Report available on oil treatment of coal (A).....681
- COBURN, JAMES M.  
Development in air transport.....153
- CODES. *See also* Standards.  
Code on Definitions and Values.....846  
Proposed revision available.....264  
Compressed-Air Safety Code available.....767  
Test Code for Dust-Separating Apparatus.....846  
Test Code on Steam Turbines.....846  
Proposed revisions available.....846
- COLUMBIA UNIVERSITY  
Birthday of School of Engineering (Ed).....862
- COMBINATION BURNERS  
Installation in De Florez furnaces.....507
- COMBUSTION. *See also* Flue Gas.  
At constant volume. French symposium papers available.....264  
Downdraft conversion burner for domestic furnaces.....278  
Oil-burning orchard heaters.....445  
Wood-waste fuels; air preheating, fuel drying, feeding.....115, (C) 620
- COMBUSTION CONTROL  
Automatic control for boilers.....588  
Automatic steam control for steam-electric locomotive.....713  
De Florez furnaces.....509
- COMPREG  
Wood-plastic for propeller blades (A).....232
- CONCRETE, FLY-ASH  
Properties of (C).....476
- CONDIT, KENNETH H.  
Appointed dean of Princeton School of Engineering (A).....917  
Nominated for Vice-President of A.S.M.E.....630
- CONNOLLY, EDWARD W.  
Receives Charles T. Main Award.....49
- CONSTRUCTION  
Industrial renaissance of the South.....281
- CONTESTS  
Timber-bridge design.....264
- CONTROLS  
Automatic steam control for steam-electric locomotive.....713  
For machine tools (C).....245
- CORNELIUS, HENRY R. Fifty-Year Member.....50
- CORNELL UNIVERSITY  
Celebration for centennial of birth of Robert Henry Thurston.....934  
Expansion program.....95  
560, 696, (Ed) 780,
- CORPORATIONS  
Paid directors (Ed).....346
- CORROSION. *See also* Boiler Corrosion, Fretting Corrosion.  
Comparative corrosion as a function of temperature of babbitt metal and cadmium silver with different lubricating oils.....358  
Coordinating committee on, formed.....336
- COSTS  
Committee on cost-price relationships formed.....420
- COTTONSEED  
Research on processing of.....131, (C) 618
- COTTRELL BLOCK  
Properties of (C).....476
- COUPLINGS  
Improved types needed for ship drives.....205
- CRANKSHAFTS, SECTIONAL (A).....314
- CRAWFORD, ALBERT BEECHER  
Preprofessional training.....114
- CREEP OF METALS  
Creep in tubular pressure vessels (C).....757  
Methods of testing.....590  
Steels, tests and methods (A).....314  
Variables affecting creep strength.....593
- CROSSAN, THOMAS E.  
Economics of a power plant for joint utility and industrial service..121, (C) 619
- "CRYO-VAC"  
Rubber wrapper for foods (A).....317
- CUTTING TOOLS. *See* Tools.
- CYCLOTRON  
Ion accelerator (A).....164, 754
- DAVIS, RAYMOND E.  
Utilization of pulverized-coal ash (C).....475
- DAY BY DAY  
Comments on current events...155, 227, 309, 381, 465, 539, 612, 678, 748, 829, 915
- DECELOSTAT  
Wheel-sliding preventer.....584
- DE FLOREZ FURNACES. *See* Oil-Still Furnaces.
- DE FOREST, A. V.  
Hard-surfacing process and materials (C).....395  
Receives Sylvanus Albert Reed Award...255
- DEGLER, H. E.  
The internal-combustion engine (BR)....402
- DESCALING. *See* Flame Descaling.
- DESIGNING AND THE DESIGNER (A).....316
- DESUPERHEATING  
Problem of.....720
- DEVELOPMENT OF NEW PRODUCTS.....661
- DICK, G. M.  
Canadian mine hoists.....885
- DIESEL ENGINES. *See* Engines.
- DIESEL FUEL. *See* Fuel.
- DIESEL RAIL CARS  
Controls for (A).....33  
In Great Britain.....433
- DIESEL, RUDOLF  
Recollections of.....215
- DIRECT ROLLING. *See* Metal Rolling.
- DIRECTION FINDERS. *See* Aircraft Instruments.
- DOHERTY, ROBERT E.  
Social responsibility of the engineer.....653
- DOMESTIC FURNACES  
Downdraft conversion burner for.....278
- DOTY, PAUL  
Council resolution on death of.....42  
Tribute (Ed).....4
- DRAFTING  
Legible blueprints (C).....551
- DREWRY, M. K.  
Corrosion in partially dry steam-generating tubes (C).....552
- DREYFUS, EDWIN D.  
Economics of a power plant for joint utility and industrial service (C).....620
- DRIERS  
Use of, in combustion of wood waste....119
- DRIVES. *See also* Electric Motors.  
Quarter-turn belt drive (C).....927
- DRY ICE. *See* Carbon Dioxide.
- DRYDEN, HUGH L.  
Presents Wright Brothers Lecture.....97
- DRYERS. *See* Driers.
- DUNN, GANO  
Appointed to Civil Service Committee...263  
1939 recipient of Hoover Medal.....854
- DUFO NUMBER  
Ignition quality of Diesel fuels (A).....831
- DURAMOLD  
Used for airplanes (A).....546
- DURAND, W. F.  
Pelton water wheel.....447, 511
- DUST  
Sampling air impurities (A).....468
- DUST EXPLOSIONS  
Control of (C).....320

## D

## E

- ECONOMIC PROBLEMS  
Whichever way (Ed).....345
- ECONOMIC RECOVERY  
And government spending (BR).....307  
Day by day.....381
- ECONOMIC RESEARCH  
Committee on cost-price relationships formed.....420
- ECONOMICS  
Applied economics for engineers (BR)....928  
Automobile show (A).....916  
Business cycles.....27  
Capital-goods industries and the American enterprise system (A).....381  
Economic factors of housing problem...781  
Extra-tariff control of foreign trade....790  
Government spending and economic recovery (BR).....307  
Industrial and agricultural balance.....437, (C) 925  
Industrial price policies and economic progress (BR).....226, 392, (C) 394  
Industrial renaissance of the South.....281  
Major reports issued.....943



## ECONOMICS (continued)

Mathematical formulas as aids to business choices (BR).....	535
Monopoly-investigation testimony.....	159
Power plants for joint utility and industrial service..... 121, (C).....	619
Price of security (BR).....	463
Promises and debts (BR).....	27
Purchasing power, price fixing, high wages, inflation, and a flexible system.....	209
Uninvested savings (BR).....	907
Young engineer facing tomorrow.....	347

## ECONOMICS CONFERENCE

For engineers, ninth annual. 253, 411, 491,.....	627
--	-----

## EDITORIALS

Accent on quality.....	861
Accent on quantity.....	862
Aeronautical research.....	106
Alas, the paring knife.....	345
All he can get.....	193
A.S.M.E. today.....	707
Best men are needed.....	346
British visit us.....	501
Columbia's birthday.....	862
Covers ( <i>Mechanical Engineering</i> ).....	427
Doty, Paul.....	4
Engineering's great task.....	573
Enrichment.....	779
Ford and Watt.....	707
Forty plus.....	779
Gas turbine.....	271
Good engineering also necessary.....	502
Jobs for engineers.....	428
"Light, more light".....	707
Metal-cutting data.....	779
More work for engineers.....	3
National delegates heeded.....	428
National resource.....	194
New England enterprise.....	643
No monopoly of brains.....	502
Paid directors.....	346
Patent data wanted promptly.....	427
Preprint and publication.....	501
Professional ideal.....	105
Roster of A.S.M.E. Committees.....	193
Schwab, Charles M.....	708
Significant trends.....	861
Spectrographic analysis.....	427
Thurston centenary.....	780
What about engineers' unions?.....	780
What is mechanical engineering?.....	643
Whichever way.....	345
Youth and labor.....	272
Youth at Rutgers.....	708

## EDUCATION

Accent on quality, quantity (Ed).....	861, 862
Armour and Lewis Institutes consolidated (A).....	917, 942
Condit, K. H., appointed dean of Princeton School of Engineering (A).....	917
Engineering's great task (Ed).....	573
For industry.....	875
Graduate work in engineering.....	900
Of the design engineer (A).....	316
Preprofessional training.....	114
Requisites for engineering leadership.....	903
Significant trends (Ed).....	861
Social responsibility of the engineer.....	653
Unconscious tuition.....	113
What is mechanical engineering? (Ed).....	643
Young engineer's responsibility to industry.....	136

## EKKO PROCESS

Electroforming of tire molds (A).....	830
---------------------------------------	-----

## ELASTICITY

And damping in relation to the state of the material (A).....	231
---	-----

## ELBERTY, R. S.

Motor drives and electric controls on machine tools (C).....	245
--	-----

## ELECTRIC EAR

Use of, for machine and product testing (A).....	831
--	-----

## ELECTRIC MOTORS

Drives for machine tools (C).....	245
-----------------------------------	-----

## ELECTRIC UTILITIES

Studies by Federal Power Commission.....	638
--	-----

## ELECTRICAL INSULATION

Alsifilm (A).....	384
-------------------	-----

## ELECTRICAL MACHINE

New type of (A).....	545
----------------------	-----

## ELECTROFORMING

Tire molds by Ekko process (A).....	830
-------------------------------------	-----

## ELECTROSTATIC GENERATOR

Installation at the M.I.T. (A).....	163
-------------------------------------	-----

EMPLOYMENT. *See also* Unemployment.

Increase in.....	944
Jobs for engineers..... (Ed) 428, (C).....	478
More work for engineers (Ed).....	3

## ENERGY

Weight of stored energy (A).....	836
----------------------------------	-----

## ENERGY FROM MATTER (A).....

754
-----

## ENGINE-EXHAUST-GAS CONDITIONER (A).....

832
-----

ENGINEERING. *See also* Marine Engineering.

## Mechanical Engineering.

Alas, the paring knife (Ed).....	345
----------------------------------	-----

Best men are needed (Ed).....	346
-------------------------------	-----

Good engineering also necessary (Ed).....	502
---	-----

Great task of (Ed).....	573
-------------------------	-----

Professional spirit in.....	195
-----------------------------	-----

What is it? (A).....	156
----------------------	-----

## ENGINEERING AND CIVILIZATION (BR).....

323
-----

## ENGINEERING AND PATENTS.....

531
-----

## ENGINEERING EXPERIENCE

What is it?.....	305
------------------	-----

## ENGINEERING FOUNDATION

Elects new officers.....	935
--------------------------	-----

Report of trustees.....	98
-------------------------	----

## ENGINEERING INDEX

Agreement with.....	91
---------------------	----

## ENGINEERING LEADERSHIP

Requisites for.....	903
---------------------	-----

## ENGINEERING SCHOOLS

Accrediting of.....	60
---------------------	----

And trade unions (A).....	391
---------------------------	-----

## ENGINEERING SOCIETIES

Job for (C).....	478
------------------	-----

## ENGINEERING SOCIETIES EMPLOYMENT SERVICE

Positions available..... 100, 188, 266, 340, 422, 496, 568, 638, 702, 774, 856,.....	946
--	-----

## ENGINEERING SOCIETIES LIBRARY

Aids engineers of the world.....	222
----------------------------------	-----

Greatest in the world.....	533
----------------------------	-----

Papers copied by microfilm.....	485
---------------------------------	-----

Report of trustees.....	98
-------------------------	----

## ENGINEERING STUDENTS

Statistics reported (A).....	238
------------------------------	-----

## ENGINEERS

An engineer's miscellany (BR).....	172
------------------------------------	-----

Associations in South America.....	603
------------------------------------	-----

"Ersatz," education reduced (A).....	157
--------------------------------------	-----

In public service.....	742
------------------------	-----

Incomes, All he can get (Ed).....	193
-----------------------------------	-----

Jobs for..... (Ed) 428, (C).....	478
----------------------------------	-----

Labor unions for. <i>See</i> Engineers' Unions.
---

Licensing of. <i>See</i> Engineers' Registration.
---

Light, more light (Ed).....	707
-----------------------------	-----

More work for (Ed).....	3
-------------------------	---

Physiology for.....	8
---------------------	---

Professional ideal (Ed).....	105
------------------------------	-----

Social responsibility of.....	653
-------------------------------	-----

Symposium on improvement of status of civil engineers (A).....	228
--	-----

Wage schedule and grading plan for civil engineers (A).....	767
---	-----

Will they support the professional ideal?.....	198
--	-----

Working for better engineers.....	909
-----------------------------------	-----

Young college man in industry (Ed).....	708
---	-----

Panel discussion.....	769
-----------------------	-----

Young engineer facing tomorrow.....	347
-------------------------------------	-----

Young, responsibility to industry.....	136
--	-----

## ENGINEERS' COUNCIL FOR PROFESSIONAL DEVELOPMENT

Accent on quality, quantity (Ed).....	861, 862
---------------------------------------	----------

Accrediting engineering schools.....	36
--------------------------------------	----

By-products of (BR).....	512
--------------------------	-----

Professional recognition.....	29
-------------------------------	----

Report of activities.....	60
---------------------------	----

Report of seventh annual meeting.....	909
---------------------------------------	-----

Significant trends (Ed).....	861
------------------------------	-----

## ENGINEERS' GUILD (BRITISH).....

612
-----

## ENGINEERS' REGISTRATION

Maryland enacts registration law.....	765, 844
---------------------------------------	----------

Model registration law revised.....	61
-------------------------------------	----

Professional Recognition.....	29
-------------------------------	----

Registration bill for District of Columbia.....	263, 699
---	----------

Society asked to assist in preparing examinations.....	91
--	----

What is engineering experience?.....	305
--------------------------------------	-----

## ENGINEER'S TESTIMONY (A).....

748
-----

## ENGINEERS' UNIONS

Engineering schools and trade unions (A).....	391
---	-----

Unionization of engineers.....	788
--------------------------------	-----

What about engineers' unions? (Ed).....	780
---	-----

## ENGINES

Particulars of engine economy governing marine transport.....	884
---	-----

Sectional crankshafts (A).....	314
--------------------------------	-----

## ENGINES, AIRCRAFT

Developments in 1938.....	153
---------------------------	-----

Gasoline fuel-injection type (A).....	36
---------------------------------------	----

Place of Diesel engine in our national defense.....	799
---	-----

Sklenar rotary engine (A).....	38
--------------------------------	----

ENGINES, DIESEL. *See also* Diesel Rail Cars.

Automobile, in Great Britain.....	435
-----------------------------------	-----

Comparison of ignition-quality data (A).....	832
--	-----

Convertible to gas engines (A).....	36
-------------------------------------	----

Exhaust-gas conditioner and flame arrester for mine use (A).....	232
--	-----

Forty years of development.....	213
---------------------------------	-----

Installations for U. S. merchant marine.....	203
--	-----

## ENGINES, DIESEL (continued)

Lubrication of high-speed.....	357
--------------------------------	-----

Marine, in Great Britain.....	436
-------------------------------	-----

1938 report on oil-engine-power cost available.....	845
---	-----

Opposed-piston Diesel engine (A).....	750
---------------------------------------	-----

Pescara crankless, with compressor.....	216
---	-----

Pilot-injection tests (A).....	230
--------------------------------	-----

Place of Diesel engine in our national defense.....	799
---	-----

Present position of, in Great Britain.....	429
--	-----

Pumpless injection (A).....	833
-----------------------------	-----

Traction-type opposed-piston engine (A).....	313
--	-----

## ENGINES, GAS

Present position of, in Great Britain.....	429
--	-----

## ENGINES, GASOLINE

Carburetorless (A).....	36
-------------------------	----

Convertible to gas engines (A).....	36
-------------------------------------	----

ENGINES, INTERNAL-COMBUSTION. *See also* Gas Turbines.

Book Review.....	402
------------------	-----

Design in Europe.....	525
-----------------------	-----

Four-cylinder engine of the Volkswagen (A).....	312
---	-----

French symposium papers on combustion available.....	264
--	-----

Lead attack on exhaust valves (A).....	615
--	-----

Multifuel engines (A).....	923
----------------------------	-----

Present position of, in Great Britain.....	429
--	-----

Reducing noise from, in ships (A).....	35
--	----

## ENGINES, NATURAL-GAS

Report on gas-engine power (A).....	36
-------------------------------------	----

## ENGINES, STEAM

Steam-engine history (BR).....	323
--------------------------------	-----

Thomas Newcomen's steam engine (C).....	837
---	-----

## ENNIS, W. D.

Applied economics for engineers (BR).....	928
---	-----

## ENRICHMENT (Ed).....

779
-----

## EPSTEIN, EDWARD

Centenary of photography (translation).....	24
---	----

## ESHELMAN, J. W.

Nominated for Manager of A.S.M.E. ....	632
--	-----

## EUROPEAN SCIENTIFIC JOURNALS

Report failure to receive.....	942
--------------------------------	-----

## EVANS, OLIVER

- FLANDERS, RALPH E.**  
Immersion quick freezing (C)..... 925
- FLAX**  
Flax in cotton industry (A)..... 752
- FLIGHTRAY.** See Aircraft Instruments.
- FLOW OF FLUIDS.** See also Fluid Meters,  
Pitot Tubes.  
Air flow in pipes..... 665  
Determination of pipe-line velocities in  
brackish water..... 530
- FLOWMETERS.** See Fluid Meters.
- FLUE GAS**  
Stack-loss chart for refinery gas..... 510
- FLUE-GAS ANALYSIS**  
Check chart for, oil stills..... 510
- FLUID METERS**  
Discharge coefficients for concentric thin-  
plate orifices with vena-contracta taps  
(C)..... 550  
Magnetic flowmeter..... 20  
Notes on flowmetering published..... 552  
Pipe bends and meter location..... 549
- FLY ASH**  
Utilization of (C)..... 475
- FOOD PACKAGING**  
Rubber wrapper for foods (A)..... 317
- FOOD-PRESERVATION CONFERENCE.**..... 337
- FOOD PROCESSING**  
Immersion quick freezing..... 437, (C) 925
- FORD, HENRY**  
Ford and Watt (Ed)..... 707  
I.M.E. confers honorary membership..... 854
- FORDE, W. T.**  
Tooling automatic screw machines (C).... 239
- FOSTER, JED S.**  
Testimonial dinner..... 678
- FOURNEYRON, BENOIT**  
Biography..... 295
- FREEMAN, RALPH E.**  
Technology and price-making (BR).....  
..... 226, (C) 394
- FREEMAN, STERRY B.**  
Mechanical-engineering problems in ma-  
rine transport (abstract)..... 882
- FREEZING PROCESSES.** See Frozen Foods.
- FRETTING CORROSION**  
Report of tests on (A)..... 386
- FRICTION.** See also Adhesion.  
Braking of railroad trains..... 585  
Chromium plating gives low coefficient of  
friction (A)..... 830  
Coefficients of, for automobile tires..... 125
- FROZEN FOODS**  
Immersion quick freezing..... 437
- FRT, LAWFORD H.**  
Receives Worcester Reed Warner Medal. 49
- FUEL.** See also Gasoline, Lignite, Wood  
Waste.  
Combustion in small underfeed stokers  
(A)..... 682  
Comparative economy of generating  
steam with anthracite, bituminous coal,  
and fuel oil for industrial plants in New  
York area..... 804  
Ignition quality of Diesel fuels (A)..... 831  
Power and fuel..... 581  
Standards proposed for tractor dis-  
tillates (A)..... 617
- FUEL DRYING**  
Effect of, on wood-waste fuel..... 119
- FUEL-INJECTION SYSTEMS**  
For gasoline engines (A)..... 36
- FUNK, FRITZ.** Obituary..... 158
- FURER, W. C.** Salute to..... 679
- FURNACES.** See Blast Furnaces, Boiler  
Furnaces, Domestic Furnaces, Oil-Still  
Furnaces.
- G**
- GAGES**  
Ordnance laboratory at Carnegie Tech... 564
- GAS TURBINES**  
Combustion gas turbine..... 645  
Gas Turbine (Ed)..... 312  
Jendrassik combustion turbine (A)..... 214  
Vogt's experiments..... 214
- GASES**  
Specific heats of, new equations (A)..... 389  
Temperature measurement of (A)..... 545
- GASOLINE**  
Rating of 125 octane..... 510
- GASOLINE ENGINES.** See Engines.
- GEARS**  
Load-capacity formulas for (A)..... 233
- GEER, WILLIAM C.**  
History of rubber as an engineering ma-  
terial (C)..... 243
- GILBRETH, LILLIAN M.**  
Management in the small plant..... 597
- GLADDEN, CHARLES S.**  
Combustion of wood-waste fuels (C)..... 621
- GLASS**  
Invisible, light transmission of (A)..... 231  
New optical glass patented (A)..... 384  
New ultra-low-expansion (A)..... 615
- GLASS WOOL.** See Mineral Wool.
- GOODRICH, ERNEST P.**  
Immersion quick freezing (C)..... 925
- GOUGE, A.**  
Transatlantic air transport with particu-  
lar reference to flying boats (abstract). 876
- GOVERNMENT**  
Domestic issues (A)..... 915  
Extra-tariff control of foreign trade..... 790  
Fair Labor Standards Act (BR)..... 678  
Research activities of the..... 376  
Young engineer facing tomorrow..... 347
- GOVERNMENT LOANS**  
Good engineering also necessary (Ed).... 502  
To business..... 565
- GOVERNMENT REORGANIZATION**  
Effective July 1st..... 568  
Report by A.E.C..... 338, 494
- GOVERNMENT SPENDING**  
Day by day..... 381
- GOVERNMENT SPENDING AND ECONOMIC RE-  
COVERY (BR)..... 307**
- GRADUATES**  
Job prospects, 1939..... 699
- GRAVES, B. P.**  
Motor drives and electric controls on ma-  
chine tools (C)..... 246
- GRINDING.** See also Thread Grinding.  
Of high-speed cutting tools (A)..... 388
- GRINDING MACHINES**  
Machine-tool-spindle analysis..... 813
- GRINDING-WHEEL PRACTICE**  
Revised recommendations available..... 700
- H**
- HABEL, O. W.**  
Machine design and motion economy.... 897
- HAGGARD, HOWARD W.**  
Physiology for the engineer..... 8
- HAIGHT, H. V.**  
Canadian mine hoists..... 885
- HALL, R. E.**  
Corrosion in partially dry steam-generat-  
ing tubes (C)..... 552  
Routing nightmares of water condition-  
ing..... 715
- HARD SURFACING**  
Processes and materials for (C)..... 395
- HARDIE, P. H.**  
Defining equitable limits of dust emission  
from stacks..... 895
- HARDNESS TESTER (A)..... 753**
- HARTIG, HENRY E.**  
Air flow in pipes..... 665
- HATCH, THEODORE F.**  
Medicolegal phases of occupational dis-  
eases (BR)..... 759
- HAUSHALTER, F. L.**  
Rubber as an engineering material (C).... 242
- HAZELETT, C. W.**  
Direct rolling of metal..... 823
- HEAT INSULATION**  
Mineral Wool (A)..... 384
- HEAT-TREATMENT.** See also Nitriding, Sur-  
face Hardening.  
Austempering steel (A)..... 683
- HEATERS, ORCHARD**  
A new type..... 443, (C) 837
- HEATING**  
Combustion in small underfeed stokers  
(A)..... 682
- HEATING SYSTEMS**  
Efficiencies of steam turbines combined  
with..... 669
- HECK, R. C. H.**  
New Callendar steam tables (BR)..... 839  
Vapor charts (BR)..... 840
- HELANDER, LINN**  
Nominated for manager of A.S.M.E..... 632
- HELICOPTERS**  
Aeronautical research (Ed)..... 106
- HELIUM**  
New uses for, in anesthesia, asthma,  
deep-sea diving..... 112  
Solubility of, in oil and water compared  
to nitrogen..... 112
- HENDERSON, YANDELL**  
The possible use of helium in subaqueous  
engineering..... 112
- HERON, ALEXANDER R.**  
Labor problems of branch-plant manage-  
ment..... 722
- HERRON, JAMES H.**  
Unionization of engineers..... 788
- HEWES, C. K.**  
New-type orchard heater (C)..... 837
- HILDBRETH, W. O.** Fifty-Year Member... 50
- HIRSHFELD, C. F.**  
Awarded John Fritz Medal posthumously. 943  
Biography..... 467
- HOBART, JAMES C.** Fifty-Year Member... 50
- HODGES, JOHN L.**  
Smoke-density measurements (C)..... 73
- HODGKINSON, FRANCIS**  
Holley Medal recipient..... 49  
Latest developments of the Benson  
Boiler..... 217  
Typical installations of..... 287  
Nominated for Vice-President of  
A.S.M.E..... 631  
Steam-turbine efficiencies..... 668
- HOGAN, JOHN P.**  
Nominated president of A.S.C.E..... 856
- HOISTING MACHINERY**  
Canadian mine hoists..... 885
- HOLLAND, C. K.**  
Metropolitan junior group objectives (C). 478
- HOMERBERG, V. O.**  
Hard-surfacing processes and materials  
(C)..... 395
- HONORS AND AWARDS**  
Alfred P. Sloan Foundation  
Scholarships in business administration. 697  
A.S.M.E. Medal..... 536  
Recipients of..... 537  
Awards for 1939 voted..... 844  
Awards in industry..... 310  
Calvin W. Rice Lecture (A.S.M.E.)..... 599  
Charles T. Main Award (A.S.M.E.)..... 182  
1939 subject announced..... 157  
Edison Medal (A.I.E.E.) Award..... 227  
Presentation..... 5  
Henry Robinson Towne Lecture..... 168  
Holley Medal (A.S.M.E.)..... 854  
History of, and recipients..... 228  
Hoover Medal. Awards..... 707  
Presentation..... 228  
James Watt International Medal.  
Award..... 943  
John Fritz Medal. Presentation..... 106  
Posthumous award..... 157  
Juan de la Cierva Memorial Fellowship  
(Ed)..... 357  
King George's New Year's honors (A).... 182  
Lamme Medal (A.I.E.E.) Award..... 302  
Local-Sections Prizes (A.S.M.E.)..... 304  
Melville Medal (A.S.M.E.)..... 182  
Recipients of..... 49  
Old Guard Prizes (A.S.M.E.)..... 935  
Pi Tau Sigma Award..... 225  
Presentation of, at Annual Meeting..... 224  
Rice Scholarships established..... 225  
Robert Henry Thurston Lecture..... 225  
Spirit of St. Louis Junior Award..... 224  
Spirit of St. Louis Medal (A.S.M.E.)..... 225  
Recipients..... 182  
Student-Group Meeting Prizes..... 493  
Student loans by A.S.M.E. Woman's  
Auxiliary..... 255  
Sylvanus Albert Reed Award (I. A. S.)... 182  
Undergraduate-Student Awards..... 698  
United Air Lines Scholarships  
A.S.M.E. student members win..... 917  
Vermilye Medal. Presentation (A)..... 229  
Washington Award. Presentation of..... 379  
Worcester Reed Warner Medal..... 380  
Recipients of..... 97  
Wright Brothers Lecture (I.A.S.)..... 781
- HOUSING**  
Economic factors of housing problem.... 781
- HOWARD, GEORGE W.**  
Determination of pipe-line velocities in  
brackish water..... 530
- HUDSON, R. M.**  
Industry, labor, and the public (C)..... 244
- HUMPHREYS, CYRIL G. R.** Newcomen and  
Humphrey Potter (C)..... 837  
The tilt hammer (C)..... 756
- HUNSAKER, J. C.**  
Nominated for Vice-President of  
A.S.M.E..... 630
- HYDRAULIC MACHINE TOOLS.** See Machine  
Tools.

<b>HYDRAULIC TURBINES</b>	
Early turbines of Fourneyron.....	295
Modern trends in design.....	575
Pelton water wheel, historical.....	447, 511, (C) 755
<b>HYDRAULICS</b>	
Biography of Benoit Fourneyron.....	295
Lecture course announced by B.S.C.E.....	847
<b>"HYDROCAL"</b>	
Apparatus for solving heat-transient problems (C).....	319
<b>HYDROELECTRIC POWER PLANTS.</b> See Power Plants.	
<b>HYDROGENATION.</b> See Coal Hydrogenation.	

## I

<b>IGNITION QUALITY</b>	
Rating of Diesel fuel (A).....	831
<b>ILLINOIS INSTITUTE OF TECHNOLOGY</b>	
Consolidation of Armour and Lewis Institutes.....	917, 942
<b>ILLUMINATION.</b> See also Lighting.	
Affects more than the eye.....	9
Reflecting surfaces.....	137
<b>IMMERSION QUICK FREEZING.</b> See Frozen Foods.	
<b>INCOME</b>	
National, definition and comparison of... 159	
<b>INDUSTRIAL CONFERENCE</b>	
Young college man in industry.....	697, 769
<b>INDUSTRIAL MANAGEMENT.</b> See Management.	
<b>INDUSTRIAL PRICE POLICIES AND ECONOMIC PROGRESS (BR).....</b>	226, 392, (C) 394
<b>INDUSTRIAL RELATIONS</b>	
Compulsory arbitration in Australia (BR).....	148
Functions of the executive (BR).....	375
Human relations in industry (BR).....	580
Industry, labor, and the public (C).....	244
Pacific Coast peculiarities of branch-plant management.....	724
Youth and labor (Ed).....	272
<b>INDUSTRIAL TRAINING</b>	
Young college man in industry (Ed).....	708
Panel discussion.....	769
<b>INDUSTRIAL WASTE</b>	
Problems and their correction.....	359
<b>INDUSTRIES</b>	
Contribution to stream pollution.....	360
<b>INDUSTRY</b>	
Awards to workers.....	310
In rural communities.....	925
Bibliography.....	437, (C) 442
Industry, labor, and the public (C).....	244
Modernization in, survey (A).....	156
Monopoly-investigation testimony.....	159
Paid directors (Ed).....	346
Renaissance of the South.....	281
Young college man in.....	769
Young engineer facing tomorrow.....	347
<b>INFLATION</b>	
And the gold standard.....	209
<b>INGRAHAM, OLIN</b>	
Mathematical formulas as aids to business choices (BR).....	535
<b>INSTRUMENTATION</b>	
Conference on, planned.....	186
<b>INSTRUMENTATION CONTEST.</b>	766
<b>INSULATION.</b> See Electrical Insulation, Heat Insulation.	
<b>INSURANCE</b>	
Boiler and machinery insurance (A).....	750
<b>INTERNAL-COMBUSTION ENGINES.</b> See Engines.	
<b>INTERNAL-COMBUSTION NUTCRACKER (A)...</b>	236
<b>INTERNATIONAL CONGRESS OF MATHEMATICIANS</b>	
Cambridge meeting.....	264
<b>INTERVIEW FACILITIES</b>	
For A.S.M.E. members.....	424
<b>INVENTION</b>	
Development of new products.....	661
<b>INVISIBLE GLASS.</b> See Glass.	
<b>IRBY, WILLIAM</b>	
Materials for reflecting surfaces.....	137
<b>IRWIN, K. M.</b>	
Nominated for Vice-President of A.S.M.E.....	632

## J

<b>JACKSON, DUGALD C.</b>	
Edison Medal award.....	157, 227
<b>JACOBUS, D. S.</b>	
Cooperative work of the A.S.M.E. Boiler Code Committee.....	595
<b>JAMES, J. R.</b>	
Utilization of pulverized-coal ash (C)....	476
<b>JEWETT, FRANK B.</b>	
Presented with John Fritz Medal.....	228
<b>JOBS REQUIRE CAPITAL</b>	
Survey by Toledo Associates (A).....	156
<b>JOHNSON, RAWLEIGH M.</b>	
Influence of steam-flow metering equipment on piping design (C).....	547
<b>JOHNSON, WILFRID E.</b>	
Receives Pi Tau Sigma Award.....	49
<b>JOINT PATENT INQUIRY.</b> See Patent Inquiry.	
<b>JUDKINS, MALCOLM F.</b>	
Metal cutting.....	349

## K

<b>KEARFUL, G. G.</b>	
Machine design and motion economy....	897
<b>KEATOR, FREDERIC W.</b>	
Benoit Fourneyron (1802-1867).....	295
<b>KELLER, ARTHUR G.</b>	
Factors in sugar-cane milling.....	365
<b>KERR, CHARLES, JR.</b>	
Electric locomotives (C).....	473
<b>KIDDE, WALTER</b>	
Railroad trustee (A).....	679
<b>KIMMICH, E. G.</b>	
Misconceptions about rubber (A).....	237
Production processes and problems in the rubber industry (A).....	165
<b>KINZEL, A. B.</b>	
Hard-surfacing processes and materials (C).....	396
<b>KLEIN, AUGUST C.</b>	
Economics of a power plant for joint utility and industrial service... 121, (C) 619	
<b>KLINE, M. E.</b>	
A.S.M.E. Publications "back talk" (C)...	759
<b>KOLTZ, H. J.</b>	
Industrial-evaporators (C).....	241
<b>KREISINGER, HENRY</b>	
Combustion of wood-waste fuels. 115, (C) 620	
<b>KUGEL, H. K.</b>	
Smoke-density measurements (C).....	73

## L

<b>LABOR</b>	
Awards in industry.....	310
Floor under wages (BR).....	676
Industrial renaissance of the South.....	281
<b>LABOR AND YOUTH (Ed).....</b>	272
<b>LABOR, INDUSTRY AND THE PUBLIC (C)...</b>	244
<b>LABOR PROBLEMS</b>	
Domestic issues (A).....	915
Of branch-plant management.....	722
<b>LABOR UNIONS.</b> See also Engineers' Unions.	
For engineers..... (A) 391,	788
Youth and labor (Ed).....	272
<b>LAIRD, A. W.</b>	
Electric locomotives (C).....	473
<b>LAMPS, ELECTRIC</b>	
New types and applications (A).....	468
<b>LANSFORD, W. M.</b>	
Magnetic flowmeter.....	20
<b>LARNED, A. T.</b>	
Hydroelectric power-plant design.....	575
<b>LASTICS.</b> See Synthetic Rubber.	
<b>LATCHES</b>	
Quick-acting release latches.....	807
<b>LEAD ATTACK ON ENGINE EXHAUST VALVES (A).....</b>	615
<b>LEONARD, A. S.</b>	
A new-type orchard heater.... 443, (C) 837	
<b>LESLIE, GEORGE C.</b>	
Design and operation of De Flores furnaces.....	503
<b>LESSELLS, JOHN M.</b>	
A rational approach to tire-tread design..	125

<b>LIBRARIES.</b> See Engineering Societies Library.	
<b>LICENSING OF ENGINEERS.</b> See Engineers' Registration.	
<b>LIGHTING.</b> See also Illumination.	
Reflectors for.....	137
<b>LIGNITE</b>	
Composition of gases in fuel bed of.....	116
<b>LIPETZ, A. I.</b>	
Electric locomotives (C).....	474
Melville Medal Recipient.....	49
<b>LIPPS, HENRY, JR.</b> Fifty-Year Member... 50	
<b>LIVERNASH, E. ROBERT</b>	
National Labor Relations Act (BR).....	740
<b>LOCOMOTIVES</b>	
Additions and corrections to 1938 report of Railroad Division Committee RR6 Survey.....	149
Comparisons of various characteristics of different types of (C).....	472
Construction details of various types... 863	
Design factors affecting riding, guiding, and rail and locomotive stress (C).....	472
Steam versus Diesel-electric (A).....	469
Weights of various types (C).....	473
<b>LOCOMOTIVES, DIESEL-ELECTRIC</b>	
Heat losses and operating costs (A).....	470
Switchers in Great Britain.....	434
<b>LOCOMOTIVES, GAS-TURBINE</b>	
Comparisons with other types.....	648
<b>LOCOMOTIVES, STEAM</b>	
Counterbalance tests.....	867
Heat losses and operating costs (A).....	470
Road tests of.....	866
<b>LOCOMOTIVES, STEAM-ELECTRIC</b>	
Demonstration trip.....	466
Design of the Union Pacific steam-electric locomotive..... 709, 817,	869
<b>LONG, MARSHALL C.</b>	
Receives postgraduate student award....	49
<b>LOUISIANA ENGINEERING SOCIETY</b>	
Program of meeting.....	178
<b>LUBRICANTS</b>	
Additive agents for high-speed Diesels...	357
<b>LUBRICATION</b>	
Of high-speed Diesel engines.....	356
<b>LUCKE, CHARLES E.</b>	
Engineering and patents.....	531
<b>LUSHER, DAVID W.</b>	
Government spending and economic recovery.....	307

## M

<b>MACHINABILITY.</b> See Metal Cutting.	
<b>MACHINE DESIGN</b>	
Education for (A).....	316
Formulas for gears (A).....	233
Motion economy in.....	897
New method of machine-tool-spindle analysis.....	813
Quick-acting release latches.....	807
<b>MACHINE TOOLS</b>	
Advantages of hydraulic drives (A).....	165
Machine design and motion economy....	897
Motor drives and electric controls (C)....	245
New methods of machine-tool-spindle analysis.....	813
Tooling automatic screw machines (C)...	239
<b>MACHINERY INSURANCE (A).....</b>	750
<b>MACLAURIN, W. RUPERT</b>	
Industrial relations in Australia (BR)...	148
<b>MAGNA CHARTA (A).....</b>	541
<b>MAINTENANCE</b>	
Function of management.....	373
Use and properties of hard chromium plating (A).....	830
<b>MANAGEMENT</b>	
Courses at University of Iowa.....	337
Functions of the executive (BR).....	375
History of scientific management in America.....	671
Labor problems of branch-plant management.....	722
Materials, methods, and men.....	5
Organization problems of branches.....	460
Paid directors (Ed).....	346
Principles of, applied to the small business.....	373
Science of production organization (BR)...	172
Small-plant.....	597
Social relationships and industrial unrest (BR).....	580
Trade associations (BR).....	80
<b>MANAGEMENT CONFERENCE</b>	
Iowa City..... 255,	412



MANAGEMENT CONGRESS Proceedings of Washington meeting available at reduced cost.....	943	MEYER, ADOLPHE Combustion gas turbine.....	645	NATIONAL RESOURCES Major reports issued.....	943
MANUFACTURERS, CENSUS OF Value of products and persons employed by industries contributing to stream pollution.....	360	MICA SUBSTITUTE Alsilfilm (A).....	384	NATIONAL RESOURCES BOARD Establishment of, proposed.....	263
MANUFACTURING Industrial renaissance of the South.....	281	MIDWEST POWER CONFERENCE.....	337, 412	NATURAL-GAS ENGINES. <i>See</i> Engines.	
MARINE ENGINEERING Benson boilers on German ships.....	221	MILITARY STRENGTH. <i>See also</i> Army Aviation, Army Ordnance, National Defense, Naval Vessels, Preparedness, War. Principal nations except U. S.....	14	NAVAL VESSELS Place of Diesel engine in our national defense.....	799
Developments in the U. S. merchant marine.....	203	MILL WHEEL (1835) (C).....	321	NEFF, ELMER H. Control of small-plant purchases (C).....	552
Marine steam power plants (A).....	686	MILLER, PAUL V. Recent developments in thread-grinding practice (C).....	244	Cost of apprenticeship (C).....	394
MARKS, LIONEL S. Smoke-density measurements (C).....	74	MILLER, RICHARD F. Strength of metals at elevated temperatures.....	589	How Useful Is Your Sense of Proportion? (C).....	319
MARKSON, A. A. Photographic study of steam-boiler furnaces in operation.....	729	MILLS, SUGAR-CANE Types and performance of.....	365	Thread-grinding practice (C).....	243
MARTIN, S. M., JR. Synthetic substances with rubber-like properties (C).....	320	MINE HOISTS. <i>See</i> Hoisting Machinery.		NELLES, JOHN S. Possibilities for utilization of pulverized-coal ash (C).....	477
MARON, MARTIN A. Pelton water wheel (C).....	755	MINERAL WOOL Production, fabrication, and application of (A).....	384	NELSON, ELWOOD E. Corrosion in partially dry steam-generating tubes.....	552
MATHEMATICS "Center" of mathematical analysis established at M.I.T.....	309	MINERALS Strategic minerals sought.....	943	NEUTRALITY Day by day (A).....	915
McBRYDE, WARREN H. Nominated for president of A.S.M.E.....	629	Storage of.....	566	NEW ENGLAND Modernization in industry (A).....	156
McCUNE, JOSEPH C. Braking high-speed trains as an engineering problem.....	583, 657	MOCK, RICHARD M. Development in airplane design.....	151	NEW ENGLAND ENTERPRISE (Ed).....	643
McCUTCHAN, ARTHUR Creep in tubular pressure vessels (C).....	757	MODELS Tests on all-welded girder (A).....	544	NEW YORK WORLD'S FAIR (A).....	540
McDONALD, A. T. Some factors in the lubrication of high-speed Diesel engines.....	356	MODERNIZATION IN INDUSTRY Survey in New England (A).....	156	NEWCOMEN AND HUMPHREY POTTER (C).....	837
McDONALD OBSERVATORY.....	385	MONNETT, OSBORN Smoke-density measurements (C).....	74	NIEHOFF, RICHARD O. Graduate work in engineering.....	900
McGREGOR, DOUGLAS Social relationships and industrial unrest (BR).....	580	MONOPOLY INVESTIGATION. <i>See</i> Temporary National Economic Committee.		NITRIDING Fry process (C).....	395
McINERNEY, J. E. B. Place of Diesel engine in our national defense.....	799	MOORE, A. D. Quantitative analysis of process lags (C).....	319	NOISE. <i>See also</i> Sound. Electric noise analyzer (A).....	831
McPHERSON, A. T. Rubber as an engineering material (C).....	242	MORGAN, H. H. Installed as president of A.S.T.M.....	694	Reduction of, on ships (A).....	35
McSORLEY, DONALD C. Receives undergraduate student award.....	49	MORKEK, CARL H. Some engineering aspects of cast iron.....	455	NORRIS, C. B. Elected chairman of Executive Committee of Wood Industries Division.....	934
MEAD, DANIEL W. Washington Award presented to.....	229	Moss, SANFORD A. "Back talk" on publications (C).....	622	NOZZLES Speed regulating, for Pelton wheels.....	516
MEASURING INSTRUMENTS For measuring thickness of metal from one surface (A).....	231	MOTION-AND-TIME STUDY Scientific management in the small business.....	374	NUTCRACKER, INTERNAL-COMBUSTION (A).....	236
Millionths of an inch (A).....	236	MOTOR VEHICLES. <i>See also</i> Automobiles. Motor Transport in Great Britain (abstract).....	878	NYLON Synthetic fiber (A).....	35
Ordnance laboratory at Carnegie Tech.....	564	Railway-highway competition in Great Britain (A).....	683		
Spectrograph, analysis with (Ed).....	427	Regenerative braking (A).....	685		
Velocity of air flow in pipes, measurement by sound pulses.....	665	Snow cruiser for antarctic exploration (A).....	684		
MECHANICAL ENGINEERING Materials, methods, and men.....	5	MOWAT, MAGNUS Retires as secretary of I.M.E.....	186		
What is mechanical engineering? (Ed).....	643	MUMFORD, A. R. The Engineering Societies Library.....	533		
MEDALS. <i>See</i> Honors and Awards.		MUSEUMS Sheffield Museum (A).....	382, (C) 756		
MEDICAL TREATMENT Freezing human diseases (A).....	754	Technical museums in Soviet Russia.....	735		
MERCURY Many uses of (A).....	920				
METAL CUTTING. <i>See also</i> Flame Cutting. Manual on Cutting of Metals.....	694, (Ed) 779				
Manufacture and use of high-speed cutting tools (A).....	387				
Principles underlying mechanism of cutting metals with single-point tools; machinability measurement and control; selection of machinable and tool materials.....	349				
METAL ROLLING Direct rolling of metal.....	823				
METAL SPINNING (A).....	751				
METALLURGY. <i>See also</i> Cast Iron, Steel. Austenitizing steel (A).....	683				
Boiler-embrittlement specimens (C).....	146				
Creep of steel (A).....	314				
Direct rolling of metal.....	824				
Fatigue and corrosion fatigue of steels (C).....	318				
Hardness of weld deposits on mild steel (C).....	396				
Properties, alloys, heat-treatment, specifications, and uses of cast iron.....	455				
Researches in steel metallurgy (A).....	751				
Strength of metals at elevated temperatures.....	589				
METALS Reflectivity of.....	137				
METEOROLOGY Development in.....	150				
METERS. <i>See also</i> Fluid Meters, Pitot Tubes. Smoke-density indicators (C).....	71				

## N

## O

## P

- PAINTS, TEMPERATURE-INDICATING (A).... 471
- PALMER, DWIGHT L.  
Price of security (BR)..... 463
- PANTKE, C.  
Modern timber construction..... 791
- PARK, G. E.  
New lamps and applications (A)..... 468
- PARKER CASE..... 61, 181, 847
- PARSONS, SIR CHARLES (A)..... 748
- PARTIDGE, EVERETT P.  
Corrosion in partially dry steam-generating tubes (C)..... 552  
Routing nightmares of water conditioning..... 715
- PATENT INQUIRY..... 186, 263, (Ed) 427, 483, (Ed) 502
- PATENT SYSTEM  
Changes before Congress..... 638
- PATENTS  
Congress acts..... 699  
Data wanted..... (Ed) 427, 483  
Protection necessary..... 462  
Senator O'Mahoney's views on (A)..... 227  
Trade associations (BR)..... 80
- PATENTS AND ENGINEERING..... 531
- PATTERSON, W. J.  
New I.C.C. commissioner..... 679
- PELTON WATER WHEEL  
History of..... 447, 511, (C) 755
- PERRY, H. M.  
Quarter-turn belt drive (C)..... 927
- PERRY, THOMAS D.  
Exposure tests on plywood (C)..... 319
- PETROLEUM. *See also Fuel, and headings under Oil.*  
Oil treatment of coal (A)..... 681
- PETROLEUM REFINING  
Design and operation of De Flores furnaces..... 503  
Gas-turbine supercharger for Houdry oil-refining process..... 647
- PHOTOELASTICITY  
Conference on..... 942  
Slicing models with light beams (A)..... 469
- PHOTOGRAPHIC EMULSIONS  
Spectrum, energy distribution, density curves, wedge spectrograms, and sensitizing diagrams..... 731
- PHOTOGRAPHY  
Annual-Meeting exhibit (1938)..... 91  
Annual-Meeting exhibit (1939)..... 763  
Centenary of..... 562, 628, 697, 24  
Photographic study of steam-boiler furnaces in operation..... 729
- PHYSIOLOGY  
And air conditioning..... 141  
For the engineer..... 8
- PIGOTT, STEPHEN J.  
Awarded A.S.M.E. Medal..... 50
- PIPE  
A.S.T.M. issues specifications for H-T and H-P piping..... 700  
New American standard for (A)..... 33
- PIPE FITTINGS. *See Welding Fittings.*
- PIPING  
Influence of steam-flow metering equipment on piping design (C)..... 547
- PITOT TUBES  
Simplified traverse for..... 22
- PLANNING  
National, discussed by A.E.C..... 176
- PLANT INSPECTIONS  
New England invites engineers (Ed)..... 643
- PLANT LAYOUT  
For the small plant..... 374
- PLASTICS  
Booklet proposed by committee..... 854  
"Compreg" used for aircraft propellers (A)..... 232  
"Plastic" airplane..... 546  
Service-temperature flow characteristics of thermoplastics..... 892  
This modern age of plastics (A)..... 836
- PLYWOOD  
Exposure tests on (C)..... 319  
Modern timber construction..... 791
- PORCELAIN ENAMEL  
Reflectivity of..... 137
- POSEY, CHESLEY J.  
Rupture under triaxial stress (C)..... 477
- POTONNÉE, GEORGES  
Centenary of photography..... 24
- POTTER, A. A.  
Engineering's part in the development of civilization (BR)..... 323  
Federal government and research..... 376
- POWELL, SHEPPARD T.  
Industrial-waste problems and their correction..... 359
- POWER  
Economics of a power plant for joint industrial and utility service..... 121  
Exports supervised..... 943  
Methods of storing (A)..... 389
- POWER PLANTS. *See also Marine Engineering, Naval Vessels, Ships.*  
Economics of, for joint utility and industrial service..... 121  
Installations of the Benson boiler..... 287  
Solar-heat (A)..... 388
- POWER PLANTS, DIESEL  
Installations for U. S. merchant marine..... 203
- POWER PLANTS, HYDROELECTRIC  
Modern trends in design of..... 575
- POWER PLANTS, STEAM  
Comparative economy of generating steam with anthracite, bituminous coal, and fuel oil, for industrial plants in New York area..... 804  
Design trends..... 581  
Economics of, for joint utility and industrial service..... 121, (C) 619  
Installations for U. S. merchant marine..... 203  
Superposed unit at L Street Station, Boston Edison Co..... 519  
Variable-pressure system of operation..... 292
- PREFABRICATED HOUSES  
The case for prefabrication..... 787
- PREPAREDNESS. *See also Army Aviation, Army Ordnance, Military Strength, National Defense, Naval Vessels, War.*  
America looks to her guns..... 273  
Committee to review educational orders of War Department..... 748  
National Industrial Preparedness Dinner. Practice orders awarded by the army..... 328  
Strategic minerals..... 568, 943  
Trade cotton for rubber..... 700  
War Resources Board appointed..... 774  
World of today (A)..... 465
- PRESSURE VESSELS  
Creep in tubular pressure vessels (C)..... 757
- PRICE FIXING  
And fair-trade laws..... 210
- PRICE SETTING  
Mechanistic and dynamic..... 394  
..... (BR) 226, (BR) 392, (C) 394
- PRICES  
Committee on cost-price relationships formed..... 420
- PRIMING. *See Steam Quality.*
- PRIZES. *See Honors and Awards.*
- PROCESS LAGS  
Heat transients visualized by the "Hydrocal" (C)..... 319
- PRODUCT ENGINEERING  
Development of new products..... 661
- PRODUCTION, ORGANIZATION OF. *See Management.*
- PROFESSIONAL IDEAL (Ed)..... 105
- PROFESSIONAL RECOGNITION  
Summary of E.C.P.D. report..... 29
- PROFESSIONS  
Professional aspects of medicine, law, and engineering..... 196
- PROPELLERS. *See Air Propellers, Ship Propellers.*
- PUBLIC SERVICE  
How can engineers help?..... 743
- PUBLIC WORKS  
Economic effects of..... 210  
Technical Public Works Committee formed (A)..... 229
- PUMPS  
High-pressure slush pump..... 727
- PURCHASING POWER  
Effects of attempts to raise..... 209
- PYROSCOPE  
Heat protection device for cameras..... 730
- QUICK FREEZING. *See Frozen Foods.*
- RADIO FACSIMILE. *See Facsimile.*
- RAIL ADHESION  
Coefficient of..... 583
- RAILROAD CARS  
Lightweight passenger rolling stock (abstract)..... 880
- RAILROAD CARS AND TRAINS  
Survey..... 871
- RAILROADS  
Braking high-speed trains..... 583, 657  
Railway-highway competition in Great Britain (A)..... 683
- RAILWAY MECHANICAL ENGINEERING  
Corrections and additions to 1938 report of Railroad Division Committee RR6 Survey..... 149  
Progress in, 1938-1939..... 863
- RATHBONE, THOMAS C.  
Fatigue and corrosion fatigue of steels (C)..... 318
- RAUTENSTRAUCH, WALTER  
Industrial price policies and economic progress (BR)..... 392
- RAYMOND, F. E.  
Directs patent inquiry..... 263
- REES, ROBERT IRWIN  
Biographic memorial booklet..... 158
- REFLECTING SURFACES  
Reflectivity of various materials..... 137
- REFRIGERATION. *See also Frozen Foods.*  
Freezing human diseases (A)..... 754  
Vapor charts (BR)..... 840
- REFUGEES  
Humanitarian engineer (A)..... 157
- REGENERATIVE BRAKING. *See Brakes.*
- REGISTRATION OF ENGINEERS. *See Engineers' Registration.*
- REID, D. G.  
Influence of steam-flow metering equipment on piping design (C)..... 548
- RESEARCH. *See also National Advisory Committee for Aeronautics.*  
Aeronautical (Ed)..... 106  
Air conditioning (A)..... 141  
Bills introduced in Congress..... 338  
Building-materials fellowship..... 264  
Building-materials tests (A)..... 166  
Chilled-car-wheel project..... 186  
Committee on cost-price relationships formed..... 420  
Cottonseed processing..... 131  
Expenditures for, by universities..... 378  
Function of management..... 373  
Governmental and other agencies for..... 376  
National-aid bill proposed..... 263  
National resource (Ed)..... 194  
Note on new British laboratory (A)..... 310  
Processing and marketing of crops..... 438, (C) 925  
Program of coal research..... 419  
Relationship of the Federal Government to..... 419  
Services of Engineering Societies Library..... 222  
Sugar-cane milling, tests..... 368  
W.P.A. summary and index of..... 97
- RÉTHI, LILI  
Enrichment (Ed)..... 779
- RHODIUM  
Plating, for light reflectors..... 140
- RICHARDSON, EDWARD ADAMS  
Price-making (C)..... 394
- RIDGWAY, ROBERT. An appreciation..... 158
- RIFLES. *See Army Ordnance.*
- RINGELMANN CHARTS. *See Smoke Indicators.*
- ROBERTS, PERCIVAL. Fifty-Year Member..... 50
- ROCK WOOL. *See Mineral Wool.*
- ROSS, JAMES D. Biographical sketch of... 383
- RUBBER  
As an engineering material (C)..... 241  
Bonding of, to metal (A)..... 165  
Design data available (C)..... 242  
From 1839 to 1939 (A)..... 829  
Misconceptions about (A)..... 237  
Present-day applications of (A)..... 165  
Testing of (C)..... 242
- RUBBER SPRINGS  
Spencer-Moulton railroad spring (C)..... 241
- RUBBER SUBSTITUTES. *See Synthetic Rubber.*
- RUBBER WRAPPER FOR FOODS (A)..... 317
- RUPTURE  
Of materials under triaxial stress. 107, (C) 477
- RUSSIA  
Technical museums in Soviet Russia..... 735
- RUTGERS UNIVERSITY  
Home-study courses..... 853  
Industrial conference..... 697 769



## S

- SACKETT, R. L.  
Cost of apprenticeship (C)..... 395
- SAFETY  
Aircraft accidents (A)..... 471  
And factory layout (A)..... 238  
Machinery accidents in 1938 (A)..... 680  
New York safety meeting..... 328
- SAFETY CODES. *See* Codes.
- ST. PATRICK  
Patron Saint of mechanical engineers..... 258
- SALVAGE IN A UTILITY COMPANY (A)..... 617
- SANDERS, NEWELL. Fifty-Year Member... 50  
Life of..... 229
- SCHMELTZER, J. E.  
Engineering developments in the United States merchant marine..... 203
- SCHMITTER, W. P.  
Load capacity of gears (A)..... 232
- SCHWAB, CHARLES M. (Ed)..... 708
- SCIENTIFIC MANAGEMENT. *See* Management.
- SCOTT, CHARLES F.  
Testimonial dinner to..... 768  
What is engineering experience?..... 305
- SCREW THREADS  
Grinding of (C)..... 243
- SECURITY  
Human relations in industry (BR)..... 580  
Price of (BR)..... 463
- SEELY, WARNER  
Industry, labor, and the public (C)..... 244
- SELLERS, COLEMAN, 3RD  
Motor drives and electric controls on machine tools (C)..... 246
- SHEFFIELD MUSEUM..... 382
- SHERMAN, RALPH A.  
Smoke-density measurements (C)..... 75
- SHERWOOD, T. K.  
A simplified pitot-tube traverse..... 22
- SHIP PROPELLERS  
Voith-Schneider ship propeller (A)..... 834
- SHIPS. *See also* Marine Engineering, Naval Vessels.  
Advantages of gas-turbine drive..... 651  
American superliners (A)..... 919  
Engineering developments in the U. S. merchant marine..... 203  
German, using Benson boilers..... 221  
Isolation of engine noise (A)..... 35  
Liner America..... 205  
Marine steam power plants (A)..... 686  
Mechanical-engineering problems in marine transport (abstract)..... 882  
New *Mauretania*..... 564  
The *Panama*. World of today (A)..... 465  
Twin-Hull (A)..... 310
- SHOEMAKER, G. T.  
Nominated for manager of A.S.M.E. .... 633
- SHORT, BYRON E.  
Influence of steam-flow metering equipment on piping design (C)..... 548
- SIKORSKY, IGOR I.  
Aeronautics and national defense..... 523
- SILICOSIS  
Sampling air impurities (A)..... 468
- SKAPERDAS, G. T.  
Simplified pitot-tube traverse..... 22
- SKLENAR ROTARY ENGINE (A)..... 38
- SLAG WOOL. *See* Mineral Wool.
- SMITH, ARNOLD A.  
Combustion of wood-waste fuels (C)..... 621
- SMITH, E. S.  
Notes on flowmetering published (C).... 552
- SMITH, E. W. P.  
Hard-surfacing processes and materials (C)..... 396
- SMOKE  
Combustion space, setting height, smoke (abstract)..... 896  
Defining equitable limits of dust emission from stacks..... 895
- SMOKE INDICATORS AND RECORDERS  
Smoke-density measurements (C)..... 71
- SNELLING, H. H.  
Trade associations in law and business (BR)..... 80
- SNOW CRUISER (A)..... 684
- SOCIAL RESPONSIBILITY  
Of the engineer..... 653
- SOCIAL SECURITY. *See* Security.
- SOCIAL SECURITY ACT  
Changes proposed..... 263
- SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION  
Elects officers..... 627  
Statistics on engineering students (A).... 238
- SOCIETY OF AUTOMOTIVE ENGINEERS  
World Congress..... 328, 492, 542
- SOLAR HEAT  
Utilization of (A)..... 388
- SOUND. *See also* Noise.  
Isolation of engine mountings (A)..... 35
- SOUTH  
Industrial renaissance of the..... 281
- SPECIFIC HEATS OF GASES  
New equations for (A)..... 389
- SPECTROGRAPHIC ANALYSIS (Ed)..... 427
- SPILHAUS, ATHELSTAN F.  
Development in meteorology..... 150
- SPINK, L. K.  
Influence of steam-flow metering equipment on piping design (C)..... 549
- SPRATT, H. PHILIP  
Technical museums in Soviet Russia..... 735
- SPRENKLE, R. E.  
Influence of steam-flow metering equipment on piping design (C)..... 550
- STANDARDS  
Allowances above finished sizes for rough-cutting sizes of lumber (A)..... 167  
A.S.T.M. changes method of publishing standards..... 565  
Index available for A.S.T.M. standards.. 336  
Index of, available from A.S.A. .... 419  
New American pipe standard (A)..... 617  
Proposed for tractor distillate (A)..... 39  
Size and shape of vegetables (A)..... 54  
Status of twelve codes..... 38  
Steam-turbines and generators (A)..... 80  
Trade associations (BR)..... 80
- STANIER, WILLIAM A.  
Lightweight passenger rolling stock (abstract)..... 880
- STARR, G. W.  
Present-day popular economic thought... 209
- STATISTICAL METHODS SYMPOSIUM..... 254
- STATISTICS  
Summer course in, at M.I.T. .... 419
- STEAM. *See also* Superheated Steam, Desuperheating.  
Economies of a power plant for joint utility and industrial service..... 112
- STEAM BOILERS. *See* Boilers.
- STEAM CONDENSERS  
Tube-scale prevention..... 718
- STEAM-GENERATING TUBES. *See* Boiler Tubes.
- STEAM QUALITY  
Carry-over in steam..... 717, 720
- STEAM TABLES  
New Callendar steam tables (BR)..... 839  
Vapor charts (BR)..... 840
- STEAM-TURBINE GENERATORS  
Design trends..... 582  
Standards for (A)..... 38
- STEAM TURBINES  
Design of Union Pacific steam-electric locomotive..... 709, 817  
Design trends in..... 582  
Efficiencies of..... 668  
Industrial and auxiliary..... 588  
Installations for U. S. merchant marine.. 203  
Rotative boiler turbine (A)..... 835  
Variable-pressure operation..... 292
- STEEL  
Austempering steel (A)..... 683  
Booklet on industry (A)..... 156  
Comparative creep strength of alloy steels 593  
Fatigue and corrosion fatigue of (C).... 318  
Researches in metallurgy (A)..... 751  
"Semisteel" a misnomer..... 458  
Stainless steel in unfired pressure vessels (Boiler Code)..... 553
- STEEL PLANTS  
U. S. Steel's Irvin plant (A)..... 156
- STELLITE  
For light reflectors..... 140
- STERN, ARTHUR C.  
Receives Junior Award..... 49
- STEVENS, JOHN FRANK  
Awarded Hoover Medal..... 97, 228
- STEVENSON, A. R., JR.  
Development of new products..... 661  
Requisites for engineering leadership.... 903
- STOKERS  
Combustion, small underfeed stokers (A) 682
- STORCH, H. H.  
Coal hydrogenation..... 605
- STOREROOMS  
Management of..... 374
- STRAUB, F. G.  
Boiler-water treatment..... 142  
Corrosion in partially dry steam-generating tubes..... 199, (C) 552
- STREAM POLLUTION. *See* Water Pollution.
- STRESS  
Triaxial, considerations on rupture under..... 107, (C) 477
- STRUCTURES  
Modern timber construction..... 791
- STUCKEY, H. P.  
Immersion quick freezing (C)..... 905
- SUGAR-CANE MILLING  
Problems in..... 365
- SUPERHEATED STEAM  
Control of superheat..... 582
- SUPLEE, HENRY H. Fifty-Year Member... 50
- SURFACE HARDENING  
Processes and materials for (C)..... 395
- SWOPE, GERARD  
Delivers 1538 Towne lecture..... 50  
Mechanical Engineering: Materials, Methods and Men..... 5
- SYNTHETIC FIBERS  
Nylon, substitute for silk (A)..... 35  
Synthetic wool from milk..... 664
- SYNTHETIC RUBBER (C)..... 320
- LASTICS (A)..... 918
- SYNTHETIC SILK. *See* Synthetic Fibers.

## T

- TALMAGE, A. A.  
A.S.M.E. Publications "back talk" (C) .. 759
- TANKS, FIGHTING  
Development, status, and manufacture.. 13
- TARIFF  
Invisible tariff (BR)..... 790
- TAXES  
World of today (A)..... 465
- TAYLOR, C. FAYETTE  
Development in power plants..... 153
- TAYLOR, E. HALL  
New developments in welding fittings.... 370
- TAYLOR, R. BROOKS  
Immersion quick freezing..... 437, (C) 925
- TAYLOR, WILLIAM M. Fifty-Year Member. 50
- TECHNICAL PAPERS  
New rules and procedure for..... 59
- TECHNICAL PUBLIC WORKS COMMITTEE  
Formation and personnel of (A)..... 229
- TELEGRAPH INDUSTRY  
Carrier circuits, varioplex, and facsimile. 317
- TELESCOPES  
McDonald Observatory (A)..... 385
- TEMPERATURE INDICATORS  
Thermopaints (A)..... 471
- TEMPERATURE MEASUREMENT  
Of gases (A)..... 545
- TEMPERATURE MEASUREMENT AND CONTROL  
Symposium planned..... 253, 562, 845
- TEMPORARY NATIONAL ECONOMIC COMMITTEE  
Program of..... 163  
Report of A.E.C. of testimony before... 159  
Senator O'Mahoney's views on patents (A)..... 227
- TERMITES  
Preventatives against..... 792
- TESTING EQUIPMENT  
Corrosion in partially dry boiler tubes... 199  
Creep-testing apparatus..... 591  
Diamond hardness tester (A)..... 753  
Electric testing of products by sound (A) 831  
Friction tests on rubber tires..... 127  
Hardness tester (A)..... 753  
Measuring thickness of metal from one surface (A)..... 231  
Measuring torsional vibration..... 216  
"Pinching-off" effect..... 108  
Spectrographic analysis (Ed)..... 427  
Sugar-cane milling..... 368  
Torsion tests (A)..... 164
- TESTING MATERIALS. *See also* Creep of Metals.  
Advantages of torsion tests (A)..... 164  
Nondestructive testing (A)..... 231  
Plastometer and Durometer readings on rubber (C)..... 242  
Rupture under triaxial stress... 107, (C) 477  
Service-temperature flow characteristics of thermoplastics..... 892  
Strength and hardness of cast irons..... 456

TESTING MATERIALS ( <i>continued</i> )	
Strength of metals at elevated temperatures.....	589
Tests on Compreg (A).....	232
TEXTILES	
Flax in the cotton industry (A).....	752
THERMOPAINTS (A).....	
471	
THIOL	
Rubber-like substance (C).....	320
THOMSON, ELIHU	
Commemorative meeting for.....	310
THORSON, A. W.	
Possibilities for utilization of pulverized-coal ash (C).....	477
THREAD-GRINDING PRACTICE (C).....	
243	
THUMM, CARL	
Quick-acting release latches.....	807
THURSTON LECTURE. <i>See</i> Honors and Awards—Robert Henry Thurston Lecture.	
THURSTON, ROBERT HENRY	
Centennial celebration at Cornell.....	560, 696, (Ed) 780, 934
TILT HAMMERS	
Sheffield Museum (A).....	382, (C) 756
TIMBER	
Bridge-design contest.....	264
Preservatives for.....	792
Modern timber construction.....	791
TIMBER CONNECTORS	
Modern timber construction.....	791
TIME-AND-MOTION STUDY.....	
374	
Science of production organization (BR).....	
172	
TIMOSHENKO, STEPHEN P.	
Awarded Lamme Medal of the S.P.E.E.	627
Honored by Applied Mechanics Division.....	51
TOOLING	
Economic aspects of (A).....	239
TOOLS. <i>See also</i> Machine Tools.	
Hard chromium plating (A).....	830
Manufacture and use of high-speed cutting tools (A).....	387
Single-point, for metal cutting; design, angles, materials.....	349
TORSION TESTS	
Advantages of (A).....	164
TOTALITARIAN STATES	
Professor Bridgman refuses assistance to.....	309
TOWNE LECTURE. <i>See</i> Honors and Awards—Henry Robinson Towne Lecture.	
TRADE ASSOCIATIONS	
Legal and illegal acts of (BR).....	80
TRANSMISSIONS	
Hydra-matic transmission (A).....	922
Type of, for Diesel rail cars (A).....	33
TRANSPORTATION	
Abstracts of four British papers dealing with airplanes, motor vehicles, railroad cars, and ships.....	876
Conference on new technologies in transportation.....	853
Railway-highway competition in Great Britain (A).....	683
TSCHAPPAT, WILLIAM H. Honorary Member A.S.M.E.....	
50	
TUBES. <i>See</i> Boiler Tubes, Steam Condensers.	
TUCKER, DONALD S.	
Debts and recovery (BR).....	28
Promises men live by (BR).....	27
Uninvested savings (BR).....	907
TURBINES. <i>See</i> Gas Turbines, Hydraulic Turbines.	

## U

UNEMPLOYMENT. <i>See also</i> Employment.
Day by day.....

381

UNEMPLOYMENT ( <i>continued</i> )	
Forty plus (Ed).....	779
Technological, in industry.....	212
UNEMPLOYMENT BENEFITS	
Use of reserve funds.....	212
UNIONS FOR ENGINEERS. <i>See</i> Engineers' Unions.	
UNIONS OF THEIR OWN CHOOSING (BR).....	
740	
UNITED ENGINEERING TRUSTEES, INC.	
Annual report of.....	98
UNITED STATES HOUSING AUTHORITY	
Cos. of program.....	785
UNITED STATES MARITIME COMMISSION	
Engineering developments in the merchant marine.....	203
UNIVERSITY OF TEXAS	
Homer Price Rainey inauguration.....	772

## V

VALUATION OF PLANTS	
New ideas on.....	539
VALVES	
High-pressure discharge valve for sludge.....	609
VAN DUZER, R. M., JR.	
Creep in tubular pressure vessels (C).....	757
Influence of steam-flow metering equipment on piping design (C).....	551
VAN POPPELEN, F. J.	
Factory layout and safety (A).....	238
VIBRATION	
Noise reduction in ships (A).....	35
Torsional, measuring instrument.....	216
VIOLA, BARTHOLOMEW	
Centrifugal-machine applications (C).....	758
VOITH-SCHNEIDER SHIP PROPELLER (A).....	
834	

## W

WACHS, THEODORE	
Control of dust explosions in industrial plants (C).....	320
WAGE-PAYMENT PLANS	
All he can get (Ed).....	193
WAGES	
Floor under wages: British style (BR).....	676
High wages and purchasing power.....	211
Minimum wages in Australia (BR).....	148
Survey by Toledo Associates (A).....	156
WAGNER ACT. <i>See</i> National Labor Relations Act.	
WALKER, H. B.	
Immersion quick freezing (C).....	926
WAR. <i>See also</i> Army Aviation, Army Ordnance, Military Strength, National Defense, Naval Vessels, Preparedness.	
On the four fronts (A).....	915
WATER CONDITIONING	
Causes of embrittlement (C).....	142
Corrosion of dry areas of boiler tubes.....	199
Routing nightmares of.....	715
WATER POLLUTION	
By industries.....	359
Legislation proposed.....	263
WATT, JAMES	
Ford and Watt (Ed).....	707
WEATHER	
Radiometeorograph stations.....	150
WEAVER, JAMES R.	
Elected president of Society of Tool Engineers.....	419

WEBSTER, ROSEA. Obituary.....	158
WELDED MODELS	
Tests on girder (A).....	544
WELDED PIPE JOINTS	
Tests on (A).....	543
WELDING	
High-tensile structural steel (A).....	315
New developments in welding fittings.....	370
WELDING FITTINGS	
New developments in.....	370
WESCOTT, BLAINE B.	
Fatigue and corrosion fatigue of steels (C).....	318
WESSON, C. M.	
America looks to her guns.....	273
WHEELS	
Chilled car, research project.....	186
WHICHEVER WAY (Ed).....	
345	
WICHUM, VICTOR	
Cottonseed processing research (C).....	619
WICKENDEN, WILLIAM E.	
Young engineer facing tomorrow.....	347
WILCOX, HUGH B.	
Air flow in pipes.....	665
WILKINSON, F. L., JR.	
Immersion quick freezing (C).....	926
WINTER, CHARLES C.	
Thread-grinding practice (C).....	244
WISCONSIN ENGINEERING CONFERENCE.....	
412	
WITHINGTON, SIDNEY	
Electric locomotives (C).....	474
WOOD. <i>See also</i> Plywood, Timber.	
Okoumé wood (A).....	753
WOOD WASTE	
Combustion of; analyses, air preheating, fuel drying, feeding.....	115, (C) 620
WOODWARD, A. J.	
Design of Union Pacific steam-electric locomotive.....	709, 817
WOODWORKING	
Bibliography available on machining of wood.....	696
Reducing wastes in (A).....	167
WOOLRICH, W. R.	
Cottonseed processing research.....	131, (C) 618
WORCESTER POLYTECHNIC INSTITUTE	
Wat Tyler Cluverius installed as president.....	944
WORKS PROGRESS ADMINISTRATION	
Summary and index of research published.....	97
WORLD OF TODAY (A).....	
465	
WORLD OF TOMORROW (A).....	
466	

## X

XALOT
Hard-surfacing material (C).....

395, 397

## Y

YOUTH AND LABOR (Ed).....
---------------------------

272

## Z

ZIMMERMAN, ROBERT. Wins scholarship.....	697
ZUCROW, M. J.	
Influence of steam-flow metering equipment on piping design (C).....	551

# Index to A.S.M.E. Transactions

Volume 61, 1939

The A.S.M.E. Transactions for 1939 was issued monthly. Four of the twelve issues are the *Journal of Applied Mechanics*, the page numbers of which are preceded by the letter A.

The Record and Index for the year 1939 was issued as supplements, one in February, 1939, and one in January, 1940. The page numbers for these supplements are designated by the symbol RI, and the February supplement contains its own index.

(BR) denotes book review; (D) discussion of a paper.

ADAMS, COMFORT A. Income versus production (D).....	46
AERODYNAMICS Modern developments in fluid dynamics (Br).....	A-191
AIR-IMPINGEMENT CORROSION. <i>See</i> Steam Condensers.	
AIR PREHEATERS For pulverized-coal firing (D).....	64
AIRCRAFT Comparison of initial climbs of airplane, autogiro, and helicopter.....	186
AIRCRAFT PROPELLERS. <i>See</i> Airscrews.	
AIRPLANES Comparison of power requirements with those of autogiros.....	185
AIRSCREWS Lift production with.....	179
AIRSHIPS Stress model of (D).....	A-33
AITON, J. M. Stresses in a welded pipe connection (D).....	167
ALCOCK, J. F. Pulsating air velocity measurement (D).....	306
ALDINGER, H. K. Chlorination of condenser cooling water (D).....	651
ALLEN, O. F. Five years' progress of oil and gas power (D).....	591
ALLIEN, LORENZO Air chambers for discharge pipes..... (D) 441, (D) 445	445
AMERICAN SOCIETY OF MECHANICAL ENGI- NEERS Committees. <i>See</i> Index.....	RI-43
Honorary members. <i>See</i> Index.....	RI-43
Honors and Awards. <i>See</i> Index.....	RI-43
Local Sections. <i>See</i> Index.....	RI-43
Past-Presidents. <i>See</i> Index.....	RI-43
Professional Divisions. <i>See</i> Index.....	RI-43
Representatives on other activities. <i>See</i> Index.....	RI-43
Society records. <i>See</i> Index.....	RI-43
Student Branches. <i>See</i> Index.....	RI-43
Woman's Auxiliary. <i>See</i> Index.....	RI-43
AMPLIFIERS Piezoelectric gage.....	201
ANDERSON, JOHN W. Some data on Diesel-electric switching locomotives (D).....	37
ANDRIOLA, A. D. The Vectorscope (D).....	410
ANGULARITY INDICATOR For flow of liquids.....	481, 504
ANGUS, R. W. Air chambers for discharge pipes (D).....	447
Errors of pitot tubes (D).....	493
Operation of emergency shutoff valves in pipe lines (D).....	75
ARMY ORDNANCE Interpretation of a gun failure.....	191
Piezoelectric gage for gun pressures.....	197
ATMOSPHERIC POLLUTION. <i>See</i> Smoke Abatement.	
ATOMIZATION In oil burners.....	373
AUTOGIROS Development of the Focke helicopter....	177
AUTOMATIC CONTROL AND CONTROLLERS. <i>See also</i> Pressure-Responsive Elements. Application of, in the oil industry (D)....	350
Application of, to continuous processes (D).....	358
Pressure-responsive elements (D).....	354
Quantitative analysis of process lags (D)....	67
Recent classification of regulator re- sponse (D).....	362
Regulator responsive to rate of change (D).....	366
Temperature controllers, application of (D).....	363
Temperature controllers, classification of (D).....	365

ISSUE	PAGE NUMBERS
January	1-80
February	81-176
April	177-272
May	273-368
July	369-464
August	465-560
October	561-656
November	657-740
<i>Journal of Applied Mechanics</i>	
March	A-48
June	A-49-A-96
September	A-97-A-144
December	A-145-A-192

AUTOMATIC CONTROL AND CONTROLLERS (continued)	
Terminology (D).....	358
AXLES. <i>See</i> Railroad Axles.	

## B

BAILEY, ALEX D. Chlorination of condenser cooling water (D).....	654
Slag and deslagging of steam-generating equipment (D).....	39
BAILEY, E. G. Modern boiler furnaces.....	561
Turbine-electric steamship <i>J. W. Van Dyke</i> (D).....	216
BAILEY, NEIL P. Pulsating air velocity measurement.....	301
BAKELITE Creep, elastic hysteresis, and damping in, under torsion.....	A-79
BAKER, J. G. Mathematical-machine determination of the vibration of accelerated unbalanced rotor.....	A-145
Methods of rotor-unbalance determina- tion.....	A-1, (D) A-131
BAKER, M. D. Mechanical purification of steam within the boiler drum.....	711
BALANCING. <i>See</i> Engines, Locomotives, Vibration.	
BALL, E. BRUCE Methods employed to remedy water- hammer shock in pumping systems....	5, (D) 450
BASCOMBE, GEORGE L. Turbine cylinder joints (D).....	A-31
BEAMS Collision of spheres with.....	A-69
Theory of flexure for beams with non- parallel fibers.....	A-122
BEAN, HOWARD S. Effect of pulsations on orifice meters (D)....	312
Nozzle coefficients (D).....	238
Pitot tubes in large pipes (D).....	473
Some results from research on flow nozzles (D).....	40
BEAN, L. G. Pressure-type thermometer systems (D)....	357
BEARING PRESSURES AND CRACKS.....	A-49
BEARINGS. <i>See also</i> Friction, Lubrication. Air-film bearings of graphite (D).....	344
Behavior of different bearing materials under wear conditions.... (D) 343, (D) 345	
Boundary friction in bearings at low loads.....	A-109
Clearances depend on speed and load (D)....	160

BEARINGS (continued)	
Influence of pressure on viscosity (D)....	160
Railway, "Disc-Flo" (D).....	270
Running in of (D).....	345
Thick-film lubrication of full journal bearings of finite width.....	A-117
Wearing of (D).....	345
BEHAR, M. F. Application of temperature controllers (D).....	363
Pressure-responsive elements (D).....	356
BEILBY LAYER.....329, (D) 331, 333, 341	
BEITLER, S. R. Effect of high temperatures and pressures on cast-steel venturi tubes (D).....	248
Effect of pulsations on orifice meters.....	309
Some results from research on flow nozzles (D).....	40
BELL, H. C. Design of flanged joints for valve bonnets (D).....	71
Correction.....	75
BELLOWS. <i>See</i> Pressure-Responsive Ele- ments.	
BENOIT, A. W. Twenty years of machine activity in the woolen-and-worsted industry.....	251
BERGERON, LOUIS Resurge phase of water hammer (D)....	441
BERGMAN, DONALD J. Application of automatic control in the oil industry (D).....	350
BERNHARD, R. K. Steady oscillations of systems (D).....	A-91
Yielding of mild steel (D).....	A-89
BETZ, L. DREW Sodium sulphite in high-pressure steam boilers (D).....	269
BIBLIOGRAPHIES Balancing of locomotives. A-184, 529, 542	
Bearings.....	A-113
Boiler performance with oil and natural gas.....	732
Coal-preparation, analysis, ash fusibility....	698
Creep.....	A-85
Elasticity.....	A-170
Flow nozzles and orifices.....	238
Friction.....	640
Friction and wear.....	342
Gas burners and combustion of gases.....	677
Heat transmission.....	710
Locomotive balancing.....	A-184, 529, 542
Lubrication.....	640
Management.....	299
Metals, wear of.....	342
Organization.....	299
Photoelasticity.....	A-155
Pitot tubes.....	492
Plates.....	A-116, A-170
Rubber, mechanical properties of.....	158
Spherical shells.....	A-102
Springs, helical.....	648
Steam-quality measurements.....	718
Steel, attack on, in boilers.....	621
Strength of materials.....	585
Strength of wood.....	261
Stresses, two-dimensional.....	A-66
Vibration.....	A-130
Water hammer.....	115
Wear and lubrication.....	342
BIOT, M. A. Calculating free vibrations (D).....	A-33
BISCHOP, GUSTAVE J. Cooling-tower fundamentals and their application to cooling Diesel and gas engines.....25, (D) 452	
BITTER, FRANCIS Probleme der Technischen Magnetisier- ungskurve (BR).....	A-46
Procedures in experimental physics (BR)....	A-192
BLACK, A. R. Atomization of oil by small pressure- atomizing nozzles.....	373
BLAST-FURNACE GAS. <i>See</i> Gas Fuel.	
BLIZARD, JOHN Combustion of pulverized coal (D).....	56



- BOETCHER, H. N.**  
Condenser-tube life as affected by design (D)..... 131
- BOILER CORROSION.** *See also* Feedwater Treatment.  
Attack on steel in high-capacity boilers as result of overheating due to steam blanketing..... 597  
Caustic embrittlement..... 287  
Changes in a high-pressure drum to eliminate recurrence of cracks due to corrosion fatigue..... 507  
"Hiding out" of soluble compounds..... 602  
Relation of pH value of water to temperature..... 287  
Sodium sulphite in boiler water (D)..... 53  
Sodium sulphite in high-pressure boilers (D)..... 269
- BOILER FEEDWATER.** *See* Boiler Corrosion, Feedwater Treatment.
- BOILER FURNACES.** *See also* Boilers, Stokers.  
Bagasse furnaces..... 685  
Black-liquor recovery units..... 286  
Design of high-capacity (D)..... 165  
Energy distribution in the pulverized-coal furnace (D)..... 263  
Heat-release rates..... 84, 165, 167  
Method of comparing furnace operating results..... 561  
Pulverized-coal and wood..... 282  
Pulverized-coal explosions (D)..... 65  
Recent trends in design..... 81  
Tanner S.S. J. W. Van Dyke (D)..... 216  
Wood and pulverized-coal..... 282
- BOILER OPERATION**  
Boiler-plant performance with natural-gas firing..... 727
- BOILER SLAG**  
Ash-fusion temperatures and slagging.... 561  
Lancing of boiler tubes (D)..... 40  
Prevention and removal of (D)..... 39  
Pulverized-coal furnaces (D)..... 63
- BOILER TESTS**  
Bagasse-fuel tests..... 685  
Burning pulp-mill waste from sulphite mill..... 679  
Modern boiler furnaces..... 561
- BOILER TUBES**  
Creep tests on..... 239  
Investigation of failures of..... 599  
Safe operating temperature..... 286
- BOILER WATER.** *See* Boiler Corrosion, Feedwater Treatment.
- BOILERS.** *See also* Power Plants.  
Attack on steel in high-capacity boilers as result of overheating due to steam blanketing..... 597  
Changes in a high-pressure drum to eliminate recurrence of cracks due to corrosion fatigue..... 507  
Drawings of installations (D)..... 164  
Effect of holes in bursting pressure of cylindrical pressure vessels (D)..... 516  
Effect of size on cost of steam..... 274  
High-pressure high-temperature, on S.S. J. W. Van Dyke..... 209  
Lignite-burning steam-generators..... 659  
Mechanical purification of steam within the boiler drum..... 711  
Modern installations, diagrams..... 278  
New and unusual types..... 283  
Performance of..... 281  
Selection of, for industrial plants..... 86  
Superheat control in (D)..... 63  
Tabulation of characteristics of modern pulverized-coal fired..... 82  
Tabulation of characteristics of modern stoker-fired..... 83  
Types of (D)..... 163
- BOLT FITCH**  
In flange joints (D)..... A-31
- BOLTED JOINTS.** *See* Flange Joints.
- BOLTS**  
Relaxation of (D)..... 72, (D) A-31, 544  
Stresses in, due to tightening (D)..... 72
- BONNEVILLE**  
Kaplan turbines at..... 97
- BOOK REVIEWS**  
Alchemy, the newer..... A-38  
Buckling, statics of structures..... A-47  
Elasticity, plasticity, and structure of matter..... A-43  
Elementary matrices..... A-192  
Erdbebenmechanik und Baupraxis, Eine Klarstellung..... A-44  
Fatigue of metals..... A-93  
Fluid mechanics, an introduction..... A-45  
Fluid mechanics for hydraulic engineers..... A-93  
Geometry of determinantal loci..... A-191  
Harmonic analysis..... A-45  
Heat and thermodynamics..... A-42  
Lubrication of light internal-combustion engines..... A-95  
Men of mathematics..... A-37  
Modern developments in fluid dynamics..... A-191
- BOOK REVIEWS (continued)**  
Principles of powder metallurgy..... A-41  
Problems of the magnetizing curve..... A-46  
Procedures in experimental physics..... A-192  
Railway news..... A-46  
Recollections and reflections (physics)..... A-38  
Science and human experience..... A-39  
Scientist in action..... A-37  
Sound..... A-48  
Springs..... A-48  
Statically indeterminate frameworks..... A-40  
Statically indeterminate stresses..... A-43  
Strength of materials..... A-95  
Theorie der Setzung von Tonschichten..... A-44  
Theory and performance of axial-flow fans..... A-45  
Theory of modern steel structures..... A-41  
Theory of statically indeterminate structures..... A-40  
Thermodynamics..... A-96  
Vibration..... A-93  
Vibration problems in engineering..... A-94
- BOOTH, RALPH D.**  
Trends in fuel-burning equipment and furnace design as shown by recent Eastern-Seaboard applications..... 81
- BOSTON, O. W.**  
Effect of size and shape of cut upon the performance of cutting fluids when turning S.A.E. 3140 steel..... 315
- BOURDON TUBE.** *See* Pressure-Responsive Elements.
- BOWMAN, R. A.**  
Condenser performance with reduced cooling surface..... 133
- BOYCE, J. C.**  
Recollections and reflections (BR)..... A-38  
The newer alchemy (BR)..... A-38
- BOYD, JOHN**  
Relaxation of materials at high temperature (D)..... 551
- BOYER, G. C.**  
Cooling-tower fundamentals (D)..... 452  
Theory of elastic engine supports (D)..... 460
- BRACE, A. S.**  
Thin oil films (D)..... 331
- BRISCOE, RALPH**  
Combustion of pulverized coal (D)..... 57
- BRISTOL, E. S.**  
Some fundamental considerations in the application of automatic control to continuous processes (D)..... 358
- BRUSHES.** *See* Carbon Brushes.
- BUCKWALTER, T. V.**  
Balancing reciprocating weights in steam locomotives (D)..... 530  
Locomotive axle testing (D)..... 66
- BUFFERS.** *See* Railroad Buffers.
- BUILDING MATERIAL**  
Heat conductivity of Cottrell blocks (D)..... 60
- BURKE, H. W.**  
Five years' progress of oil and gas power (D)..... 594
- BURDICK, W. E.**  
Deflection of helical springs under transverse loadings..... 623
- BURNERS.** *See* Combination Burners, Gas Burners, Oil Burners.
- BURNER, EVERS**  
Determination of the expansion forces in piping by model test (D)..... A-185
- BUSINESS ORGANIZATION**  
Design for modern business..... 291
- C**
- CAMPBELL, C. B.**  
Practical aspects of turbine cylinder joints (D)..... A-31
- CAMPBELL, O. F.**  
Combination oil-and-gas burners (D)..... 268
- CAMPBELL, W. E.**  
Studies in boundary lubrication..... 633  
Thin oil films (D)..... 331  
Wear in lubrication problems (D)..... 343
- CANAN, W. D.**  
Combustion of pulverized coal (D)..... 63
- CARBON BRUSHES**  
Wearing tests of (D)..... 344
- CARMICHAEL, COLIN**  
Pulsating air velocity measurement (D)..... 307
- CARNEY, B. R.**  
Automatic control in the oil industry (D)..... 352
- CARR, HUGH R.**  
Carbonaceous zeolites (D)..... 159
- CARTER, W. A.**  
Chlorination of condenser cooling water (D)..... 654
- CAUSTIC EMBRITTLEMENT.** *See* Boiler Corrosion.
- CAVITATION**  
Centrifugal pumps, characteristics of.... 17  
Cavitation limits for, chart..... 23  
New parameter for..... 20  
Thoma parameter..... 17  
Condenser tubes..... 125  
Resurge phase of water hammer..... 441  
Tests on model turbines for Bonneville..... 101
- CENTRIFUGAL MACHINES**  
Types and applications of..... 415
- CENTRIFUGAL PUMPS**  
Cargo pumps of oil tanker..... 212, (D) 216  
Cavitation characteristics of..... 17  
Cavitation limits for, chart..... 23  
New cavitation parameter for..... 20  
Complete characteristics diagram..... 118
- CENTRIFUGAL SEPARATION**  
Theory of..... 416
- CENTRIFUGAL STRESSES.** *See* Stresses.
- CHAIN LINKS**  
Stresses and deflections in, under cross forces..... A-171
- CHAPLIN, F. S.**  
Deflection of helical springs under transverse loadings..... 623
- CHLORINATION**  
Of condenser cooling water (D)..... 651
- CHRISTIANSEN, J. E.**  
Errors of pitot tubes (D)..... 493
- CHRISTIE, ALEXANDER GRAHAM**  
Biography..... RI-3
- CHRISTY, WILLIAM G.**  
Preparation of Illinois coal (D)..... 459
- CIRCUIT BREAKERS**  
Water type available (D)..... 289
- CLARK, C. L.**  
High-temperature-steam experience (D)..... 400
- CLARKE, CHARLES W. E.**  
Industrial power..... 273
- CLARKE, E. W.**  
Pulverized coal-tar pitch as a fuel..... 577
- CLAYPOOLE, WALTER**  
Thin oil films..... 323
- CLAYTON, DAVID**  
Thin oil films (D)..... 331
- CLEGHORN, M. P.**  
Five years' progress of oil and gas power (D)..... 594
- CLEMMITT, W. B.**  
By-product fuels in the steel industry... 665
- CLORAN, EVERETT M.**  
Rotary oil meters of the positive-displacement and current types (D)..... 347
- CLUTCHES**  
Spring clutch..... A-103
- COAL.** *See also* Pulverized Coal.  
Combustion of pulverized anthracite culm Illinois, impurities in..... 1, (D) 459  
Sulphur content of..... 4
- COAL ASH**  
Effect of preparation on ash fusibility as revealed by a study of selected Illinois coals..... 693  
Fly ash reduced by washing coal... 4, (D) 459  
Reduction of, by washing..... 3, (D) 459
- COAL PREPARATION**  
Effect of, on ash fusibility as revealed by a study of selected Illinois coals..... 693  
Problems related to preparation of Illinois coals..... 1, (D) 459
- COAL PULVERIZERS**  
Comparison of firing equipment..... 86  
Tests on..... 369
- COAL-TAR PITCH.** *See* Fuel Pitch.
- COAL WASHING.** *See* Coal Preparation.
- COBERLY, C. J.**  
Problems in modern deep-well pumping (D) 272
- COKE-OVEN GAS.** *See* Gas Fuel.
- COLE, E. SHAW**  
Errors of pitot tubes (D)..... 495  
Pitot tubes in large pipes..... 465
- COLE, EDWARD S.**  
Pitot tubes in large pipes..... 465
- COLEMAN, JOHN B.**  
Income versus production (D)..... 46
- COLLISION.** *See* Impact.
- COLORADO RIVER AQUEDUCT**  
Water hammer in pumping plants of... 117
- COLWELL, L. V.**  
Effect of size and shape of cut upon the performance of cutting fluids when turning S.A.E. 3140 steel..... 315

- COMBINATION BURNERS**  
Liquid; gaseous, and pulverized-fuel (D). 739  
Oil and gas (D). 267  
Pulverized-coke, fuel-oil, sludge, and gas. 701
- COMBUSTION. See also Fuel.**  
Burning pulp-mill waste from sulphite mill. 679  
Burning various types of oil-refinery fuels 699  
Coal-pulverizer tests. 369  
Combination oil-and-gas burners (D). 267  
Energy distribution in the pulverized-coal furnace (D). 263  
Factors influencing oil-burner performance. 373  
Fuel oil (D). 56  
Garbage in pulverized-coal furnaces (D). 60  
Natural-gas boiler firing. 727  
Pulverized coal. (D) 55, (D) 166  
Pure oxygen for pulverized-coal. 66  
Sewage sludge (D). 56  
Use of unusual and by-product fuels. 285  
Velocity of flame propagation in mixtures of pulverized coal and air. 370
- CONCORDIA, C.**  
Calculating free vibrations (D). A-36
- CONDENSER TUBES. See Steam Condensers.**
- CONDUCTIVITY. See Sound Conductivity.**
- CONDUITS. See Pipe.**
- CONTACT PRESSURES. See Bearing Pressures.**
- COOKE, HARTE**  
Friction of reciprocating engines (D). 43
- COOLING TOWERS**  
Application to cooling Diesel and gas engines (D). 452  
Fundamental relationships in design of. 721  
Fundamentals of, and their application to cooling Diesel and gas engines. 25  
Comparison of open and closed systems 29
- CORROSION. See also Boiler Corrosion, Steam Condensers.**  
Tests on materials in high-temperature steam. 392
- CORROSION FATIGUE**  
In high-pressure boilers. 507
- COTTRELL BLOCKS**  
Heat conductivity of (D). 60
- COX, I. E.**  
Oil-bath-lubricated railway bearing (D). 271
- CRACKS**  
Effect of, on contact pressure. A-49
- CRAIG, OLLISON**  
Discharge temperatures from pulverizers. 369
- CRATA, A.**  
Air chambers for discharge pipes (D). 445
- CREEP**  
Bakelite under torsion. A-79  
Rubber springs. 157, (D) 463
- CREEP OF METALS**  
Creep in tubular pressure vessels, tests. 239  
Creep rate of Armco iron (D). 50  
Creep rate of cast carbon steel (D). 50  
Effect of temperature on the creep strength of steels (D). 49  
Experience with high-temperature-steam equipment. 386  
"Flowability" of open-hearth wrought steel (D). 50  
Relaxation of bolts (D). 72  
Resistance to relaxation at high temperatures. 543
- CROFT, HUBER O.**  
Locomotive axle testing (D). 66
- CULM. See Coal.**
- CUTTING FLUIDS. See Metal Cutting.**
- D**
- DAHLSTRAND, HANS**  
High-temperature-steam experience (D). 398
- DAMPING. See Vibration.**
- DANEL, P.**  
Air chambers for discharge pipes (D). 445
- DASHNEFSKY, GEORGE J.**  
The Vectorscope. 403
- DASSO, DAVID**  
Turbine-electric steamship *J. W. Van Dyke* (D). 216
- DAVIDSON, K. S. M.**  
Pressure-responsive elements (D). 354
- DAVIS, ALBION**  
Operating methods and problems of a combined hydro- and steam-electric system (D). 555
- DAVIS, E. A.**  
Effect of the speed of stretching and the rate of loading on yielding of mild steel (D). A-89  
Yield point of low-carbon steel (D). 585
- DAVIS, E. M.**  
Further experiments in the planing of hardwoods. 139
- DAVIS, R. H.**  
Turbine-electric steamship *J. W. Van Dyke* (D). 216
- DAWLEY, C. A.**  
Effect of pulsations on orifice meters (D). 312
- DAWSON, CARLTON W.**  
Problems in modern deep-well pumping (D). 272
- DEEP-WELL PUMPING (D).** 272
- DE FOREST, A. V.**  
Yield point of low-carbon steel (D). 585  
Yielding of mild steel (D). A-89
- DEFORMATION. See also Metal Rolling.**  
Bearing pressures through a slightly waved surface or through a nearly flat part of a cylinder, and related problems of cracks. A-49
- DEGLER, H. E.**  
Five years' progress of oil and gas power. 589
- DEJUHASE, K. J.**  
Piezoelectric gage (D). 203  
Theory of elastic engine supports (D). 461  
Vectorscope (D). 410
- DEN HARTOG, J. P.**  
Rechnerische Verfahren zur Harmonischen Analyse und Synthese (BR). A-45
- DENNISON, E. S.**  
Five years' progress of oil and gas power (D). 595  
Friction of reciprocating engines (D). 42
- DEPRECIATION**  
Governmental regulations on. 147, (D) 464
- DESIGN DATA**  
Vibration problems. A-86, A-127
- DESUPERHEATERS.** 278
- DIAPHRAGMS. See Pressure-Responsive Elements.**
- DICKINSON, H. C.**  
Influence of pressure on film viscosity (D) 160
- DIESEL-ELECTRIC LOCOMOTIVES. See Locomotives.**
- DIESEL ENGINES. See Engines.**
- DIFFERENTIAL ANALYZER**  
Mathematical-machine determination of the vibration of accelerated unbalanced rotor. A-145
- "DISC-FLO" RAILWAY BEARING (D).** 270
- DITMORE, G. W.**  
Oil-bath-lubricated railway bearing (D). 270
- DOYLE, W. L. H.**  
Diesel-electric switching locomotives (D). 38
- DRABELLE, J. M.**  
Boiler furnaces (D). 569
- DREWRY, M. K.**  
Cracks in boiler drums (D). 516  
Design of high-capacity boilers (D). 163
- DRIVES**  
Centrifugal-machine. 415
- DRUCKER, D. C.**  
Fundamentals of three-dimensional photoelasticity (D). A-135
- DRYDEN, HUGH L.**  
Fluid mechanics for hydraulic engineers (BR). A-93  
Introduction to fluid mechanics (BR). A-45  
Modern developments in fluid dynamics (BR). A-191
- DRYSDALE, W. D.**  
Combustion of pulverized coal (D). 60
- DUDLEY, WINSTON M.**  
Improved method for calculating free vibrations in systems of several degrees of freedom (D). A-33
- DUTCHER, F. H.**  
Diesel-electric switching locomotives (D). 38  
Friction of reciprocating engines (D). 42
- DYNAMIC BALANCE. See Locomotives, Vibration.**
- E**
- ECKHARDT, CARL J., JR.**  
Lignite—a grate-fired fuel of the future in the Southwest. 657
- ECONOMICS**  
Income versus production (D). 46  
Obsolescence in woodworking machinery. 145, (D) 464
- EDGERTON, C. T.**  
Stresses in helical compression springs—present status of the problem. 643
- EKSERGIAN, R.**  
Balancing reciprocating weights in steam locomotives (D). 530  
Motive-power characteristics and light-weight equipment (railroads). 423
- ELASTIC ENGINE SUPPORTS**  
Theory of. 31, (D) 460
- ELASTIC HYSTERESIS**  
Bakelite under torsion. A-79
- ELASTICITY. See also Beams, Chain Links, Hysteresis, Metal Rolling, Photoelasticity, Plates, Rings, Shells, Stresses, Structures, Vibration, Wedges.**  
Bearing pressures and cracks. A-49  
Calculating energy losses during impact. A-67  
Creep, elastic hysteresis, and damping in bakelite under torsion. A-79  
Elastic stability of structures (BR). A-47  
Elastic theory of wood failure. 259  
Plasticity, and structure of matter (BR). A-43
- ELECTRIC GENERATORS**  
Stress concentration in transverse grooves of two-pole rotors. A-151
- ELECTRIC UTILITY SYSTEMS. See Power Systems.**
- ELECTRICAL EQUIPMENT**  
Improved, for power plants. 289
- ELECTRON DIFFRACTION**  
Method of studying surface phenomena. 341
- ELLENWOOD, F. O.**  
High-temperature-steam experience (D). 399
- ENGINE BALANCING. See Vibration.**
- ENGINE FOUNDATIONS**  
Vibration in. 33, (D) 460
- ENGINE SUPPORTS**  
Elastic, theory of. 31, (D) 460
- ENGINES**  
Indentation method of measuring wear in (D). 344  
Measuring pulsating gas flow to (D). 306
- ENGINES, DIESEL**  
Comparison of, with steam power for ships (D). 216  
Cooling towers and systems for. 27, (D) 452  
Five years' progress of oil and gas power. 589
- ENGINES, DIESEL, AIRCRAFT**  
Five years' progress of oil and gas power (D). 593
- ENGINES, GAS**  
Cooling towers and systems for. 27, (D) 452  
Five years' progress of oil and gas power. 589
- ENGINES, INTERNAL-COMBUSTION**  
Lubrication of (BR). A-95  
Piezoelectric gages for pressures in. 204
- ENGINES, RECIPROCATING**  
Friction in (D). 42  
Piston-ring-pocket pressures (D). 44
- ENNIS, W. D.**  
Income versus production (D). 47
- EVANS, THOMAS H.**  
Tables of moments and deflections for a rectangular plate fixed on all edges and carrying a uniformly distributed load. A-7
- EVAPORATORS.** 288
- EVERETT, F. L.**  
Investigation of stress conditions in a full-size welded branch connection (D). 167
- EXLINE, PAUL G.**  
Pressure-responsive elements (D). 354  
Pressure-type thermometer systems (D). 357
- EXPANSION**  
And forces in piping systems. A-21, (D) A-185
- EXPLOSIONS**  
Measurement of gun pressures. 204  
Pulverized-coal furnace (D). 65
- F**
- FANS**  
Theory and performance of axial-flow fans (BR). A-45
- FANTZ, F. C.**  
Stresses in a welded pipe connection (D). 168
- FATIGUE OF METALS**  
Book review. A-93  
Changes in a high-pressure drum to eliminate recurrence of cracks due to corrosion fatigue. 507  
Notch effect with initial tension. A-26  
Railroad axles (D). 66

- FEEDWATER TREATMENT.** *See also* Boiler Corrosion.  
Carbonaceous zeolites (D)..... 159  
Industrial power..... 286  
Necessity for (D)..... 64  
Removal of oxygen..... 288
- FERNALD, E. M.**  
Reheat factors for expansions of superheated and wet steam (D)..... A-140
- FESHBACH, H.**  
Method of calculating energy losses during impact..... A-67
- FILMS**  
Preparing stepped color films..... 325
- FILTER PRESSES**  
Burning pulp-mill waste from sulphite mill..... 679
- FINNICOME, J. R.**  
Calculation of steam-turbine reheat factors (D)..... A-136  
Effect of wire curvature on allowable stresses in helical springs (D)..... A-188  
Reheat factors for expansions of superheated and wet steam (D)..... A-141
- FINS**  
Heat dissipation through (D)..... A-36
- FISCHER, E. G.**  
Boundary friction in bearings at low loads..... A-109
- FLANDERS, RALPH E.**  
Income versus production (D)..... 47
- FLANGE JOINTS**  
Bolt-relaxation test (D)..... A-31  
Design of (D)..... 71  
High-temperature-steam experience..... 383  
Tests of heat-exchanger flanges (D)..... 77
- FLINN, A. C.**  
Boiler furnaces (D)..... 569
- FLOW NOZZLES.** *See* Fluid Meters.
- FLOW OF FLUIDS.** *See also* Fluid Meters.  
Analogy between fluid friction and heat transfer..... 705  
Dynamic equation for flow in a pipe..... A-11, (D) A-135  
Fluid mechanics (BR)..... A-45  
Theory and performance of axial-flow fans (BR)..... A-45
- FLOW OF GASES**  
Effect of pulsations on orifice meters..... 309  
Errors in measuring, caused by pulsating flow..... 303  
Measurement of pulsating flow..... 301  
Tests on, with pitot tubes (D)..... 497
- FLOW OF LIQUIDS**  
Angularity indicator..... 481, 504  
Coefficients for water flow through A.S.M.E. long-radius nozzles..... 233  
Design of circulating-water channels in condensers..... 125  
Effect of pulsations..... 486  
Friction coefficients for flow of water in 1-in. pipe..... A-11, (D) A-135  
Investigation of errors of pitot tubes..... 477  
Pipe factors (D)..... 495  
Pitot tubes in large pipes..... 465
- FLOW OF METALS.** *See* Metal Rolling.
- FLOW OF STEAM**  
Friction coefficients for, 1-in. pipe..... A-11, (D) A-135  
In surface condensers..... 133
- FLOWERS, A. E.**  
Centrifugal-machine applications (D)..... 421
- FLUID MECHANICS**  
Introduction to (BR)..... A-45  
Modern developments in fluid dynamics (BR)..... A-191
- FLUID METERS.** *See also* headings under Flow, Pitot Tubes.  
Coefficients for free and submerged discharge of water from A.S.M.E. long-radius nozzles..... 233  
Coefficients of flow nozzles (D)..... 40  
Effect of high-temperatures and pressures on cast-steel venturi tubes..... 247  
Effect of pulsations on orifice meters..... 309  
Over-all pressure loss in nozzles and orifices (D)..... 41  
Pulsating air velocity measurement..... 301  
Rotary oil meters (D)..... 347
- FLY ASH**  
Uses for (D)..... 60
- FOCKE, HEINRICH**  
Development of the Focke helicopter.... 177
- FOLSOM, R. G.**  
Nozzle coefficients for free and submerged discharge..... 233
- FOUNDATIONS.** *See* Engine Foundations.
- FOX, E. G.**  
By-product fuels in the steel industry... 665
- FRANK, D. S.**  
Combination oil-and-gas burners (D).... 267
- FREQUENCY REGULATION**  
Of electric-utility systems..... 94
- FRICTION.** *See also* Metal Rolling.  
Analogy between fluid friction and heat transfer..... 705  
Boundary friction in bearings at low loads..... A-109  
Coefficients of, for flow of steam and water in 1-in. pipe..... A-11, (D) A-135  
Coefficients of static friction between clean and lubricated metal surfaces... 633  
Design data on vibration..... A-128  
Determination of coefficient of static and running friction..... 329  
In reciprocating engines (D)..... 42  
Oiliness and the coefficient of static friction..... 330  
Thick-film lubrication of full journal bearings of finite width..... A-117  
Wear in sliding and rolling..... 335
- FROCHT, M. M.**  
Three-dimensional photoelasticity (D).... A-133
- FRY, L. H.**  
Balancing reciprocating weights in steam locomotives (D)..... 532  
Motive-power characteristics and light-weight equipment (railroads) (D)..... 433
- FUEL.** *See also* Coal, Fuel Pitch, Gas Fuel, Lignite, Oil Fuel, Pulverized Coal.  
Bagasse-fuel tests..... 685  
Burning pulp-mill waste from sulphite mill..... 679  
Burning various types of oil-refinery fuels Unusual and by-product fuels..... 285
- FUEL OIL.** *See* Oil Fuel.
- FUEL PITCH**  
Use of, as pulverized fuel..... 577
- FUEL-PITCH PULVERIZERS.**..... 577
- FURNACES.** *See* Boiler Furnaces, Combustion, Lime-Kiln Furnaces.
- G**
- GAGES**  
For gun pressures..... 197
- GARBAGE**  
Combustion of (D)..... 60
- GARDNER, T.**  
Burning various types of oil-refinery fuels (D)..... 703
- GARRELT, J. M.**  
Theory of statically indeterminate structures (BR)..... A-40
- GAS BURNERS**  
Characteristics of atmospheric-type burners when used with natural gas..... 673  
Magnesite for protection of (D)..... 56
- GAS ENGINES.** *See* Engines.
- GAS FUEL**  
Analysis and combustion characteristics of natural-gas fuel..... 731  
Burning blast-furnace gas over a stoker By-product fuels in the steel industry... 665  
Flame velocities in moving gas mixtures. Gas-fuel mixtures in the steel industry... 668
- GAST, G. F.**  
Burning various types of oil-refinery fuels (D)..... 703
- GEARS, ROLL-CURVE**  
Design and construction of..... 223
- GERHARDT, E. H.**  
Tests of heat-exchanger flanges (D)..... 77
- GENIESSE, J. C.**  
Wear in lubrication problems (D)..... 345
- GERMAN, A. J.**  
Condenser-tube life as affected by design and mechanical features of operation... 125
- GIERL-GIESLINGEN, A.**  
Drafting of steam locomotives (D)..... 454
- GILBERT, W. W.**  
Effect of size and shape of cut upon the performance of cutting fluids when turning S.A.E. 3140 steel..... 315
- GLENDENNING, E. B.**  
Atomization of oil by small pressure-atomizing nozzles..... 373
- GOFF, JOHN A.**  
Technische Thermodynamik (BR)..... A-96
- GOLBER, H. E.**  
Rollcurve gears..... 223
- GOLDSMITH, LESTER M.**  
High-pressure high-temperature turbine-electric steamship *J. W. Van Dyke*.... 205
- GOOD, C. W.**  
Friction of reciprocating engines (D).... 42
- GRIMM, C. I.**  
Kaplan turbines at Bonneville (D)..... 558
- GUNS**  
Interpretation of a failure of..... 191  
Piezoelectric gage for recording pressure in..... 197
- H**
- HAESSLER, WILLIAM**  
Effect of wire curvature on allowable stresses in helical springs (D)..... A-190
- HAIGLER, EDMUND D.**  
Application of temperature controllers (D)..... 363
- HALL, R. E.**  
Attack on steel in high-capacity boilers as a result of overheating due to steam blanketing..... 597
- HALMOS, E. E.**  
Air chambers for discharge pipes (D).... 445
- HARKINS, H. D.**  
Boiler furnaces (D)..... 569
- HARLOW, J. H.**  
Condenser performance with reduced cooling surface..... 133  
Operating methods and problems of a combined hydro- and steam-electric system (D)..... 557
- HARMONIC ANALYSIS**  
Book review..... A-45  
The Vectorscope..... 403
- HARRINGTON, H. L.**  
Operating methods and problems of a combined hydro- and steam-electric system..... 89, (D) 555
- HAUSHALTER, F. L.**  
Mechanical characteristics of rubber..... 149, (D) 463
- HAYES, J. A.**  
Burning various types of oil-refinery fuels (D)..... 703
- HAZARD, CHARLES S.**  
Rotary oil meters (D)..... 347
- HEAT**  
And thermodynamics (BR)..... A-42
- HEAT BALANCE**  
S.S. *J. W. Van Dyke*..... 208
- HEAT EXCHANGERS**  
Flange-joint tests (D)..... 77  
For cooling-tower use..... 28
- HEAT TRANSFER**  
Analogy between fluid friction and heat transfer..... 705  
Black-body equivalent temperature of heat-receiving surfaces..... 564  
Dissipation through fins (D)..... A-36  
Steps in, from engine cylinders to atmosphere..... 28  
Variation of coefficient of, with velocity in heat exchangers..... 27
- HEAT-TREATMENT.** *See also* Surface Hardening.  
Effect of, on springs..... A-107  
Effect of, on wear of steel..... 340  
Stress-relief anneal..... 549
- HEBLEY, H. F.**  
Preparation of Illinois coal (D)..... 459
- HECHT, MAX**  
Mechanical purification of steam within the boiler drum (D)..... 718
- HELICOPTERS**  
Development of the Focke helicopter.... 177
- HESLOP, PAUL L.**  
Kaplan turbines at Bonneville... 97, (D) 558
- HETÉNYI, M.**  
Fundamentals of three-dimensional photoelasticity (D)..... A-133  
Some applications of photoelasticity in turbine-generator design..... A-151
- HILL, F. M.**  
Determination of the expansion forces in piping by model test (D)..... A-185
- HITCHCOCK, E. A.**  
Boiler furnaces (D)..... 569  
Errors of pitot tubes..... 497  
Pitot tubes in large pipes (D)..... 473
- HITCHENS, R. M.**  
Behavior of sodium sulphite in high-pressure steam boilers (D)..... 269  
Sodium sulphite in boiler water (D)..... 53
- HODGE, A. H.**  
Use of the piezoelectric gage in the measurement of powder pressures..... 197
- HOLLISTER, S. C.**  
Cracks in boiler drums (D)..... 516  
Heat-exchanger flanges (D)..... 77
- HOOPER, L. J.**  
Errors of pitot tubes (D)..... 498



HORGER, O. J.	
Balancing reciprocating weights in steam locomotives (D).....	530
Locomotive axle testing (D).....	66
Strength of materials (BR).....	A-95
Vibration of locomotive driving wheels caused by unbalance.....	A-177
HOVGGAARD, WILLIAM	
Determination of the expansion forces in piping by model test (D).....	A-186
HOWARD PROCESS	
Treating waste sulphite liquors.....	679
HOWE, E. D.	
Characteristics of atmospheric-type burners when used with natural gas.....	673
HOYT, S. L.	
Principles of powder metallurgy (BR)....	A-41
HUBBARD, C. W.	
Investigation of errors of pitot tubes....	477
HUCKERT, J. W.	
Rollcurve gears (D).....	229
HUNTER, B. F.	
Wear in lubrication problems (D).....	343
HYDRAULIC LOG	
Hydroelectric station.....	93
HYDRAULIC TURBINES	
Kaplan turbines at Bonneville; design, construction, model tests, and setting.....	97, (D) 558
HYDRAULICS. <i>See also</i> Cavitation, Pitot Tubes, Water Hammer.	
Air chambers for discharge pipes (D)....	445
Fluid mechanics for hydraulic engineers (BR).....	A-93
Kaplan turbines at Bonneville...97, (D)	558
Operation of emergency shutoff valves in pipe lines (D).....	75
Theory of resonance in pressure conduits.	109
HYDROGEN-ION CONCENTRATION. <i>See</i> Boiler Corrosion, Feedwater Treatment.	
HYDROSTATIC TESTS	
On pipe and welded connections (D)....	172
HYSTERESIS	
In bakelite under torsion.....	A-79
Of rubber.....	156, (D) 463

## I

ILLMER, LOUIS	
Friction of reciprocating engines (D)....	44
IMPACT	
Calculating energy losses during.....	A-67
INCOME	
Versus production (D).....	46
INDEX, Mechanical Engineering.....	RI-53
INDEX, SOCIETY RECORDS.....	RI-43
INDUSTRIAL POWER. <i>See</i> Power Plants.	

## J

JACKSON, J. R.	
Drafting of steam locomotives (D).....	453
JACOBUS, D. S.	
Cracks in boiler drums (D).....	518
Stresses in a welded pipe connection (D)...	169
JAEGER, CHARLES	
Theory of resonance in pressure conduits.	109
JAMES, J. R.	
Combustion of pulverized coal (D).....	59
JASPER, T. McLEAN	
Tests of heat-exchanger flanges (D).....	77
JEFFORDS, T. W.	
Combustion of pulverized coal (D).....	60
JENKS, G. F.	
Interpretation of a failure of an ordnance structure.....	191
JESSOP, GEORGE A.	
Kaplan turbines at Bonneville...97, (D)	558
JOHNSON, H. G.	
Characteristics of atmospheric-type burners when used with natural gas.....	673
JOHNSTONE, H. F.	
Decomposition of sodium-sulphite solutions at elevated temperatures (D)....	53
Sodium sulphite in high-pressure steam boilers (D).....	269
JONES, L. B.	
Balancing reciprocating weights in steam locomotives (D).....	534

## K

KALINAK, A. A.	
Air chambers for discharge pipes (D)....	448
Errors of pitot tubes (D).....	498
KANTER, J. J.	
Creep strength of steels (D).....	49
Yield point of low-carbon steel (D).....	586
KAPLAN TURBINES. <i>See</i> Hydraulic Turbines.	
KARASSIK, I. J.	
Cavitation characteristics of centrifugal pumps described by similarity considerations.....	17
KARELITZ, G. B.	
Determination of the expansion forces in piping by model test (D).....	A-186
Friction of reciprocating engines (D)....	43
Influence of pressure on film viscosity (D)...	161
Lubrication of light internal-combustion engines (BR).....	A-95
Thin oil films (D).....	332
Wear in lubrication problems (D).....	343
KATES, E. J.	
Cooling-tower fundamentals (D).....	452
Five years' progress of oil and gas power (D).....	593
Theory of elastic engine supports (D)....	460
KEENAN, JOSEPH H.	
Friction coefficients for the compressible flow of steam.....	A-11, (D) A-135
Heat and thermodynamics (BR).....	A-42
KEETH, GROVER	
Burning pulp-mill waste from sulphite mill.....	679
KENT, R. H.	
Use of the piezoelectric gage in the measurement of powder pressures.....	197
KERR, E. W.	
Bagasse furnaces.....	685
KERR, H. J.	
Design of high-capacity boilers (D).....	163
High-temperature-steam experience (D)....	399
KESSLER, LEWIS H.	
Speed of water-hammer pressure wave in transit pipe.....	11, (D) 451
KIEFER, P. W.	
Locomotive axle testing (D).....	66
KIESEL, W. F., JR.	
Drafting of steam locomotives (D).....	456
KIMBALL, A. L.	
Sound (BR).....	A-48
Theory and performance of axial-flow fans (BR).....	A-45
KIMBALL, E. E.	
Motive-power characteristics and light-weight equipment (railroads) (D).....	434
KIMBALL, JAMES L.	
Application of temperature controllers (D).....	363
KNAPP, F.	
Operation of emergency shutoff valves in pipe lines (D).....	75
Resurge phase of water hammer (D)....	440
KRAFT-PAPER INDUSTRY	
Recovery of black liquor.....	285
KREISINGER, HENRY	
Combustion of pulverized coal (D).....	55
Lignite—a grate-fired fuel of the future in the Southwest (D).....	662
KRONENBERG, M.	
Cutting fluids for S.A.E. 3140 steel (D)...	320
KROON, R. P.	
Steady oscillations of systems (D).....	A-92
KYROPoulos, S.	
Wear in lubrication problems (D).....	343

## L

LABOR	
Working hours in the textile industry....	258
LANSFORD, W. M.	
Pitot tubes in large pipes (D).....	474
LARSEN, G. S.	
Stresses in a welded pipe connection (D)...	169
LAUX, J. P.	
Diesel-electric switching locomotives (D)...	37
LEADERMAN, HERBERT	
Creep, elastic hysteresis, and damping in bakelite under torsion.....	A-79
LECONTE, JOSEPH N.	
Experiments and calculations on the resurge phase of water hammer (D)....	440
LEE, GEORGE H.	
Pressure-responsive elements (D).....	553

LEITER, R. W. E.	
Some observations on the yield point of low-carbon steel.....	581
Yielding of mild steel (D).....	A-90
LESSELLS, JOHN M.	
La Fatigue des Métaux (BR).....	A-93
LEWIS, FRANK M.	
Einführung in die Technische Schwingungslehre (BR).....	A-93
The Vectorscope (D).....	411
LIGNITE	
A grate-fired fuel of the future in the Southwest.....	657
Combustion of.....	283
LIME-KILN FURNACES	
Combustion problems (D).....	61
LINN, F. C.	
Influence of pressure on film viscosity (D).....	160
LINSEMEYER, F. J.	
Combustion of pulverized coal (D).....	62
LIPETZ, A. I.	
Drafting of steam locomotives (D).....	454
To the question of balancing reciprocating weights in steam locomotives.....	521
Traction nouvelle (BR).....	A-46
LOAD DISPATCHING CURVES	
For power stations.....	91
LOADING DIAGRAMS	
For power stations.....	92
LOCOMOTIVE AXLES. <i>See</i> Railroad Axles.	
LOCOMOTIVES	
Axle testing (D).....	66
Motive-power characteristics of various types of.....	423
LOCOMOTIVES, DIESEL-ELECTRIC SWITCHING	
Availability factor (D).....	38
Savings in operating costs (D).....	37
Supercharging of (D).....	38
LOCOMOTIVES, STEAM	
Balancing reciprocating weights of.....	521
Draft nozzles (D).....	453
Vibration of driving wheels caused by unbalance.....	A-177
LOOMS. <i>See</i> Textile Machinery.	
LUBRICATION. <i>See also</i> Bearings, Friction.	
Cooling of turbine bearings (D).....	162
Beilby layer.....	329, (D) 331, 333, 341
Effect of different oil-film thicknesses on the resistance to mechanical wear.....	328
Effect on wear, of additions to mineral oil.....	339
Of light internal-combustion engines (BR).....	A-95
Studies in boundary lubrication.....	633
Thick-film lubrication of full journal bearings of finite width.....	A-117
Thin oil films.....	323
Wear in lubrication problems.....	335
LUHR, J. F.	
Automatic control in the oil industry (D)...	352

## M

MACGREGOR, C. W.	
Two-load method of determining average true stress-strain curve in tension.....	A-156
MACHINE DESIGN	
Design and construction of rollcurve gears.....	223
MACHINE TOOLS	
Index of orders received.....	146
MACHINERY. <i>See</i> Machine Tools, Textile Machinery, Woodworking Machinery.	
MACHINING METALS. <i>See</i> Metal Cutting.	
MACKEY, B. H.	
Piezoelectric gage (D).....	204
MAGNESITE	
Use of, for protecting burners (D).....	56
MAGNETISM	
Problems of the magnetizing curve (BR)...	A-46
MALLOZZI, PHILIP	
The Vectorscope (D).....	411
MANAGEMENT	
Obsolescence of equipment.....	145, (D) 464
Organization—design for modern business.....	291
MARCHANT, J. H.	
Determination of the expansion forces in piping by model test (D).....	A-186
MARELEY, E. H.	
Turbine-electric steamship J. W. Van Dyke (D).....	217
MARTIN, R. B.	
Chlorination of condenser cooling water (D).....	651

MASON, C. E.	
Application of automatic control to continuous processes (D).....	358
Quantitative analysis of process lags (D).....	67
MASON, M. A.	
Air chambers for discharge pipes (D).....	445
MATERIALS	
Elasticity, plasticity, and structure of matter (BR).....	A-43
Resistance of, to wear, tests.....	335
MATHEMATICAL MACHINES	
Differential analyzer.....	A-145
Vectorscope.....	403
MATHEMATICS	
Elementary matrices (BR).....	A-192
Geometry of determinantal loci (BR).....	A-191
Harmonic analysis (BR).....	A-45
Men of (BR).....	A-37
MATTIMORE, J. D.	
Design of flanged joints for valve bonnets (D).....	71
Correction.....	75
Heat-exchanger flanges (D).....	77
MAUGH, L. C.	
Statically indeterminate stresses (BR).....	A-43
Theory of modern steel structures (BR).....	A-41
MAURER, M. S.	
Chlorination of condenser cooling water (D).....	654
MCCABE, L. C.	
Effect of preparation on ash fusibility as revealed by study of selected Illinois coals.....	693
Some problems related to the preparation of Illinois coals.....1, (D).....	459
MCCOLLAM, C. H.	
High-temperature-steam experience (D).....	400
MCCUTCHAN, ARTHUR	
Flanged joints for valve bonnets (D).....	74
High-temperature steam experience at Detroit.....	383
Investigation of stress conditions in a full-size welded branch connection (D).....	167
Tests of heat-exchanger flanges (D).....	78
McKEE, S. A.	
Wear in lubrication problems (D).....	344
McKINNEY, D. S.	
Mechanical purification of steam within the boiler drum (D).....	718
McLAIN, R. H.	
Industrial power (D).....	289
McMAHON, J. B.	
Application of temperature controllers (D).....	363
Automatic control in the oil industry (D).....	351
MEASURING INSTRUMENTS. See also Testing Equipment	
Average-velocity meter, flow of gases.....	305
Callendar meter, flow of gases.....	302
Effect of pulsations on gas orifice meters.....	309
Hot-wire anemometer.....	301
Indentation method of measuring wear (D).....	344
Nozzles and orifices.....	302
Piezoelectric gage for gun pressures.....	197
Pitot tubes.....	302
Thomas meter, flow of gases.....	302
Mechanical Engineering Index.....	RI-53
MERRIAM, K. G.	
Errors of pitot tubes (D).....	499
METAL. See also Metallurgy, Powder Metallurgy.	
Beilby layer.....329, (D) 331, 333, 341	
METAL CUTTING	
Effect of size and shape of cut upon the performance of cutting fluids when turning S.A.E. 3140 steel.....	315
METAL FATIGUE. See Fatigue of Metals.	
METAL ROLLING	
Forces required for rolling steel strip under tension.....	A-54
METALLURGY. See also Powder Metallurgy.	
Attack on boiler tubes due to steam blanketing.....	597
Cracks in boiler drum due to corrosion fatigue.....	512
Effects of high-temperature steam on piping and turbine parts.....	388
Interpretation of a gun rupture.....	191
Observations on yield point of low-carbon steel.....	581
Problems of the magnetizing curve (BR).....	A-46
METCALF, P. B.	
Boiler furnaces (D).....	570
METERS. See Fluid Meters, Measuring Instruments, Pitot Tubes, Testing Equipment.	
MILLER, J. G.	
Methods employed to remedy water-hammer shock in pumping systems (D).....	450

MILLER, RALPH	
Diesel-electric switching locomotives (D).....	38
MINDLIN, R. D.	
Fundamentals of three-dimensional photoelasticity (D).....	A-135
MITEREFF, S. D.	
Application of temperature controllers (D).....	365
MODELS	
Airship structure (D).....	A-33
Expansion forces of pipe bends. A-21, (D) A-185	
Of Kaplan turbines for Bonneville, tests.....	558
Ship, tests on.....	206
MOODY, LEWIS F.	
Errors of pitot tubes (D).....	500
MORGAN, F.	
Thick-film lubrication of full journal bearings of finite width.....	A-117
MUIR, J. F.	
Boiler furnaces (D).....	571
MURRAY, WILLIAM MACGREGOR	
Heat dissipation through annular disk or fin of uniform thickness (D).....	A-36
MUSKAT, M.	
Thick-film lubrication of full journal bearings of finite width.....	A-117

## N

NADAI, A.	
Elasticity, plasticity, and structure of matter (BR).....	A-43
Erdbaummechanik und Baupraxis, Eine Klarstellung (BR).....	A-44
Forces required for rolling steel strip under tension.....	A-54
Knickung, Kippung, Beulung (BR).....	A-47
Men of mathematics (BR).....	A-37
Theorie der Setzung von Tonschichten (BR).....	A-44
NANCE, G. RUSSELL	
Fundamental relationships in the design of cooling towers.....	721
NATURAL GAS	
Combustion of.....	673
NEEDS, S. J.	
Influence of pressure on film viscosity in heavily loaded bearings (D).....	160
NEELY, G. L.	
Influence of pressure on film viscosity (D).....	161
NELIS, J. J.	
Turbine-electric steamship J. W. Van Dyke (D).....	217
NELSON, C. W.	
Vibration of locomotive driving wheels caused by unbalance.....	A-177
NEOPRENE	
Compression tests of.....	153
NEUBAUER, E. T. P.	
Effect of wire curvature on allowable stresses in helical springs (D).....	A-190
Transverse deflection of helical springs (D).....	630
NEWKIRK, B. L.	
Wear in lubrication problems (D).....	344
NEWMARK, N. M.	
Die Knickfestigkeit von Stäben und Stabwerken (BR).....	A-47
NICHOLLS, P.	
Boiler slag, prevention and removal (D).....	39
NORRIS, CHARLES B.	
Elastic theory of wood failure.....	259
NORTHUP, M. S.	
Creep in tubular pressure vessels (D).....	245
NORTON, F. H.	
Creep in tubular pressure vessels.....	239
Relaxation of materials at high temperature (D).....	552
NORTON, PAUL T., JR.	
Obsolescence in woodworking machinery.....	145, (D) 464
NOTES, M. S.	
Determination of the expansion forces in piping by model test (D).....	A-187
Turbine-electric steamship J. W. Van Dyke (D).....	218
NOZZLES. See Fluid Meters.	

## O

OBsolescence	
Air-line equipment (D).....	464
Woodworking machinery.....	145, (D) 464

OIL BURNERS	
Combustion oil-and-gas burners (D).....	267
Factors influencing performance of, tests on.....	373
OIL FILMS	
Production of specified thicknesses of.....	324
OIL FUEL	
Combustion of (D).....	56
Cost comparison of, for ships (D).....	216
Effect of viscosity on oil-burner performance.....	373
OIL INDUSTRY	
Application of automatic control in (D).....	350
Burning various types of oil-refinery fuels.....	699
Power and steam plants for oil-refinery service.....	733
OIL TANKERS. See Ships (J. W. Van Dyke).	
OLIVER, H. G.	
Tests of heat-exchanger flanges (D).....	77
ORDNANCE. See Army Ordnance.	
ORGANIZATION	
Design for modern business.....	291
ORIFICES. See Fluid Meters.	
ORMONDROYD, J.	
Science and human experience (BR).....	A-39
Vibration problems, design data.....	A-86, A-127
Vibration problems in engineering (BR).....	A-94
OSCILLATION. See Vibration.	
OSGOOD, W. R.	
Theory of flexure for beams with non-parallel extreme fibers.....	A-122
OVITZ, F. K.	
Combustion of pulverized coal (D).....	56
OXYGEN	
Use of, in pulverized-coal furnaces.....	(D) 55, (D) 66
P	
PAPER INDUSTRY	
Black liquor recovery units.....	285
Burning pulp-mill waste from sulphite mill.....	679
PARDOE, W. S.	
Effect of high temperatures and pressures on cast-steel venturi tubes.....	247
Speed of water-hammer pressure wave in transite pipe (D).....	451
PARTIDGE, E. P.	
Attack on steel in high-capacity boilers as a result of overheating due to steam blanketing.....	597
PASINI, A. C.	
Combustion of pulverized coal (D).....	61
PEABODY, R. M.	
Typical analysis of water hammer in a pumping plant of the Colorado River Aqueduct.....	117
PECKER, JOSEPH S.	
Problems and trends in centrifugal-machine applications.....	415
PETERS, J. C.	
Quantitative analysis of process lags (D).....	67
Some fundamental considerations in the application of automatic control to continuous processes (D).....	358
PETRIE, E. C.	
Flanged joints for valve bonnets (D).....	71
PHILO, F. G.	
Boiler-plant performance with natural-gas firing.....	727
PHOTOELASTICITY	
Calculation of stresses within photoelastic models.....	A-71
Fundamentals of three-dimensional photoelasticity (D).....	A-133
Some applications of, in turbine-generator design.....	A-151
PHOTOGRAPHY	
Photographing combustion in boiler furnaces.....	569, (D) 569
PHYSICS	
Alchemy, the newer (BR).....	A-38
Electron diffraction.....	341
Procedures in experimental physics (BR).....	A-192
Recollections and reflections (BR).....	A-38
Sound (BR).....	A-48
PICKETT, GERALD	
Solution of rectangular clamped plate with lateral load by generalized energy method.....	A-168
PIEZOELECTRIC GAGES	
For measuring engine pressures.....	204
For measuring gun pressures.....	197

- Pigott, R. J. S.  
Thin oil films (D)..... 332  
Wear in lubrication problems (D)..... 344
- PIPE. *See also* Piping, Transite Pipe.  
Hydraulic, effects of bursting (D)..... 76  
Steel, tests to destruction..... 172  
Welded branch connections, tests (D)..... 167
- PIPE FITTINGS  
For welding (D)..... 167
- PIPES, LOUIS A.  
Elementary matrices (BR)..... A-192
- PIPING  
High-pressure steam, on S.S. *J. W. Van Dyke*..... 208  
Metallurgical changes in, due to high-temperature steam..... 388  
Model tests of expansion forces..... A-21, (D) A-185  
Theory of resonance in pressure conduits..... 109  
Water hammer in pumping lines..... 117
- PISTON RINGS  
Pocket pressures and friction (D)..... 44
- PITOT TUBES  
Investigation of errors in..... 477  
In large pipes..... 465
- PLASTICITY  
Elasticity, and structure of matter (BR)..... A-43
- PLATES  
Clamped rectangular plates with central concentrated load..... A-114  
Collision of spheres with..... A-70  
Solution of rectangular clamped plate with lateral load by generalized energy method..... A-168  
Two-dimensional stresses in..... A-63  
Uniformly loaded, fixed on edges, moments and deflections for..... A-7
- POPE, JOSEPH  
Industrial power (D)..... 289
- PORTSKY, H.  
Numerical and graphical methods of solving two-dimensional stress problems..... A-63
- POWDER METALLURGY  
Principles of (BR)..... A-41
- POWELL, E. B.  
Boiler furnaces (D)..... 572
- POWER  
Output of Ford Motor Co..... 282
- POWER PLANTS. *See also* Engines.  
Attainable heat rates with higher pressures and temperatures..... 274  
Improved switching equipment..... 289
- POWER PLANTS, HYDROELECTRIC  
Bonneville, costs of installation at (D)..... 559  
Bonneville, Kaplan turbines..... 97, (D) 558  
Operation of, as units of a system. 89, (D) 555
- POWER PLANTS, INDUSTRIAL  
Superposed installations, steam cycles..... 274, (D) 289
- POWER PLANTS, STEAM  
Connors Creek, stoker-fired boiler (D)..... 61  
Increment costs of steam generation (D)..... 556  
Operation of, as units of a system. 89, (D) 555  
Power and steam plants for oil-refinery service..... 733  
"Steamotive"..... 283  
Trends in recent boiler installations..... 81  
Turboelectric steamship..... 205
- POWER SYSTEMS  
Operating methods and problems of a combined hydro- and steam-electric system..... 89, (D) 555
- PRESSURE. *See also* Bearing Pressures, Metal Rolling.  
Effect of high temperatures and pressures on cast-steel venturi tubes..... 247
- PRESSURE-RESPONSIVE ELEMENTS  
Discussion..... (D) 354, (D) 357  
Piezoelectric gage..... 197, 204  
Pressure-type thermometer systems (D)..... 357
- PRESSURE VESSELS  
Creep in tubular pressure vessels..... 239
- PROBABILITY, LAW OF  
Application to angles of flow..... 480
- PROCESS CONTROL. *See* Automatic Control.
- PROCESS LAGS. *See also* Automatic Control.  
Quantitative analysis of (D)..... 67
- PRODUCTION  
Income versus (D)..... 46
- PULVERIZED COAL  
Boiler performance with..... 281  
Combustion of (D)..... 55  
Combustion of anthracite culm..... 283  
Effect of fineness on combustion..... 86  
Energy distribution in the pulverized-coal furnace (D)..... 263  
Explosions in furnaces (D)..... 65  
Furnace temperatures, ash, and slag..... 561  
Tests on pulverizers..... 369
- PULVERIZERS. *See* Coal Pulverizers, Fuel-Pitch Pulverizers.
- PUMPING SYSTEMS  
Water-hammer control in..... 5, 11, 117, (D) 450, (D) 451  
PUMPS. *See also* Centrifugal Pumps.  
Problems in deep-well pumping (D)..... 272
- PURCELL, T. E.  
Design of high-capacity boilers (D)..... 166
- PURSELL, J. W., JR.  
Behavior of sodium sulphite in high-pressure steam boilers (D)..... 269  
Sodium-sulphite in boiler water (D)..... 53
- ## R
- RAIL CARS  
Diesel-electric (BR)..... A-46
- RAILROAD AXLES  
Fatigue cracks in (D)..... 67  
Locomotive axle testing (D)..... 66
- RAILROAD BUFFERS  
Rubber disks for..... 153  
Tests of old- and new-type buffers (D)..... 537
- RAILROADS  
Motive-power characteristics and light-weight equipment..... 423  
Railway news (BR)..... A-46
- RAILWAY BEARINGS  
"Disc-Flo" bearing (D)..... 270
- RATEL, MAURICE  
Boiler slag, prevention and removal (D)..... 39
- RATHBONE, T. C.  
Methods of rotor-unbalance determination (D)..... A-131  
The Vectorscope (D)..... 412
- RAUSCHER, MANFRED  
Steady oscillations of systems with non-linear and unsymmetrical elasticity (D)..... A-91
- RAUTENSTRAUCH, WALTER  
Income versus production (D)..... 46
- RAYMOND, FAIRFIELD E.  
Organization—design for modern business..... 291
- RECIPROCATING ENGINES. *See* Engines.
- REES, O. W.  
Effect of preparation on ash fusibility as revealed by study of selected Illinois coals..... 693
- REGULATORS. *See* Automatic Control and Controllers.
- REHEAT FACTORS. *See* Steam, Steam Turbines.
- REID, H. P.  
Boiler furnaces (D)..... 572
- RELAXATION. *See* Creep of Metals.
- RESONANCE. *See* Water Hammer, Vibration.
- RETTALIATA, J. T.  
Reheat factors for expansions of superheated and wet steam (D)..... A-141
- REYNOLDS, JOSEPH B.  
Chain links under cross forces..... A-171
- REYNOLDS' NUMBER  
Mean, for flow in pipes..... A-19
- RHEINGANS, W. J.  
Errors of pitot tubes (D)..... 500
- RHYS, C. O.  
Creep in tubular pressure vessels (D)..... 245
- RINGS  
Theory of deflection of circular ring..... A-175
- ROBERTS, J. F.  
Kaplan turbines at Bonneville (D)..... 559
- ROBERTSON, B. J.  
Friction of reciprocating engines (D)..... 45
- ROBINSON, E. L.  
Calculation of steam-turbine reheat factors (D)..... A-138  
Effect of temperature variation on the creep strength of steels (D)..... 49  
High-temperature-steam experience (D)..... 400  
Reheat factors for expansions of superheated and wet steam (D)..... A-142  
Resistance to relaxation of materials at high temperature..... 543
- ROLLCURVE GEARS  
Design and construction of..... 223
- ROMER, J. B.  
Attack on steel in high-capacity boilers (D)..... 621  
Cracks in boiler drums (D)..... 518
- ROSENZWEIG, S.  
Theory of elastic engine supports. 31, (D) 460
- ROSSHEIM, D. B.  
Tests of heat-exchanger flanges (D)..... 77
- ROTOR-UNBALANCE. *See* Vibration.
- ROTORS  
Centrifugal stresses in..... A-152
- ROUSE, HUNTER  
Errors of pitot tubes (D)..... 502
- ROWAND, W. H.  
Mechanical purification of steam within the boiler drum (D)..... 719
- ROWLEY, L. N., JR.  
Five years' progress of oil and gas power (D)..... 594
- RUBBER  
Mechanical characteristics of..... 33, 149, A-159, (D) 461, (D) 463  
Bibliography..... 158  
Static and dynamic constants of rubber compounds (D)..... 461
- RUBBER, SPONGE  
Compression tests on..... 151, (D) 463
- RUBBER SPRINGS  
Compression, torsion, shear; characteristics of..... 149, (D) 463  
Shear loading..... A-159
- RUDD, W. C.  
Combustion of pulverized coal (D)..... 56
- RUGG, H. M.  
Diesel-electric switching locomotives (D)..... 37
- RUIZ, A. L.  
Rollcurve gears (D)..... 230
- ## S
- SANDBLAST  
Effect of pressure on resistance to abrasion of iron and steel..... 337
- SANDERS, W. C.  
Locomotive axle testing (D)..... 66
- SAWYER, R. TOM  
Diesel-electric switching locomotives (D)..... 37
- SCHOESSOW, G. J.  
Cracks in boiler drums (D)..... 516
- SCHROEDER, BERNHARD  
Boiler furnaces (D)..... 572
- SCHULTZ, W. F.  
Turbine-electric steamship *J. W. Van Dyke* (D)..... 219
- SCHWARTZ, M. C.  
Mechanical purification of steam within the boiler drum (D)..... 719
- SCHWEIZER, P. E.  
The Vectorscope (D)..... 412
- SCIENCE  
And human experience (BR)..... A-39
- SCIENTISTS  
In action (BR)..... A-37
- SCOTT, E. KILBURN  
Combustion of pulverized coal (D)..... 55
- SEABLOOM, E. R.  
Stresses in a welded pipe connection (D)..... 170
- SEMAR, HAROLD W.  
Determination of the expansion forces in piping by model test..... A-21, (D) A-185
- SEPARATORS. *See* Centrifugal Machines, Steam Quality.
- SEWAGE SLUDGE  
Combustion of (D)..... 56
- SEWARD, H. L.  
Turbine-electric steamship *J. W. Van Dyke* (D)..... 219
- SHELLS  
Analysis of spherical shells of variable wall thickness..... A-97
- SHEPPARD, W. L.  
Deflection of helical springs under transverse loadings..... 623
- SHIPS  
High-pressure high-temperature turbine-electric steamship *J. W. Van Dyke*..... 205  
Model tests..... 206
- SHORTLEY, G. H.  
Calculation of stresses within the boundary of photoelastic models..... A-71
- SHOWERS, C.  
Combustion of pulverized coal (D)..... 59
- SIMARD, R. G.  
Wear in lubrication problems (D)..... 345
- SITTER, E. A.  
Combustion of pulverized coal (D)..... 59
- SKOGLUND, V. J.  
Boiler furnaces (D)..... 573
- SLAG. *See* Boiler Slag.
- SMITH, C. S.  
Power and steam plants for oil-refinery service (D)..... 738



- SMITH, E. DILLON  
Obsolescence in woodworking machinery (D)..... 464
- SMITH, ED S., JR.  
Application of temperature controllers (D)..... 366  
Pressure-responsive elements (D)..... 355  
Quantitative analysis of process lags (D)..... 68  
Rotary oil meters (D)..... 347
- SMITH, J. F. DOWNIE  
Mechanical characteristics of rubber (D)..... 463  
Rubber springs—shear loading..... A-159
- SMITH, R. B.  
Calculation of steam-turbine reheat factors (D)..... A-136  
Errors of pitot tubes (D)..... 503  
Pulsating air velocity measurement (D)..... 307  
Research on flow nozzles (D)..... 40
- SMITH-PETERSEN, N. O.  
Design of flanged joints for valve bonnets (D)..... 71  
Correction..... 75  
Heat-exchanger flanges (D)..... 77
- SMOKE ABATEMENT  
Effect of fineness of pulverized coal on... 86  
Use of oxygen for (D)..... 55  
Washed coal reduces fly ash and sulphur fumes..... 4, (D) 459
- SNIVELY, H. D.  
Numerical and graphical method of solving two-dimensional stress problems... A-63
- SODERBERG, C. RICHARD  
Scientist in action (BR)..... A-37  
Turbine cylinder joints (D)..... A-31
- SODIUM SULPHITE. *See* Boiler Corrosion, Feedwater Treatment.
- SOIL MECHANICS (BR)..... A-44
- SOLDATOFF, V. V.  
Boiler furnaces (D)..... 573
- SOLING, SAM P.  
Heat dissipation through fins (D)..... A-36
- SOUND (BR)..... A-48
- SOUND CONDUCTIVITY  
Of various materials..... 35, (D) 460
- SPARKS, C. H.  
Boiler furnaces (D)..... 574
- SPHERICAL SHELLS. *See* Shells.
- SPINDLES. *See* Textile Machinery.
- SPINK, L. K.  
Effect of high temperatures and pressures on cast-steel venturi tubes (D)..... 248
- SPITZGLASS, ALBERT F.  
Application of automatic control to continuous processes (D)..... 361  
Application of temperature controllers (D)..... 364  
Automatic control in the oil industry (D)..... 350
- SPONGE RUBBER. *See* Rubber.
- SPOTTS, M. F.  
Analysis of spherical shells of variable wall thickness..... A-97
- SPRAGUE, RUSSELL  
Income versus production (D)..... 48
- SPRENKLE, R. E.  
Effect of pulsations on orifice meters (D)..... 313
- SPRING CLUTCHES. *See* Clutches.
- SPRINGS. *See also* Rubber Springs.  
Book review..... A-48  
Deflection curves for cork, rubber, and steel springs..... 36, (D) 460  
Deflection of helical springs under transverse loadings..... 623  
Helical, allowable stresses in..... A-25, (D) A-188  
Linear and torsional spring constants..... A-129  
Spring clutch..... A-103  
Stresses in helical compression springs..... 643  
Vibration of..... 31, (D) 460
- STARRUCK, G. F.  
Balancing reciprocating weights in steam locomotives (D)..... 535
- STEAM. *See also* Flow of Steam, Fluid Meters, Superheated Steam.  
Calculation of steam-turbine reheat factors (D)..... A-136  
Reheat factors for expansions of superheated and wet steam (D)..... A-140
- STEAM BLANKETING. *See* Boilers.
- STEAM BOILERS. *See* Boilers.
- STEAM CONDENSERS  
Chlorination of condenser cooling water (D)..... 651  
Corrosion of tubes as affected by design and operation..... 125  
Performance of, with reduced cooling surface, tests..... 133  
Removing entrained air in water supply..... 217  
Retubing of, tests..... 133
- STEAM QUALITY  
Conductivity tests of samples taken with different types of steam-drum baffles... 711
- STEAM TURBINES. *See also* Power Plants.  
Calculation of reheat factors (D)..... A-136  
High-temperature-steam experience..... 383  
Industrial installations listed by types and capacities..... 274  
Lubricating and cooling bearings (D)..... 162  
Metallurgical effects on, due to high-temperature steam..... 390  
Mixed-pressure installations..... 277  
Stresses in T-head blade fastenings..... A-153  
Types for industrial plants..... 273
- STEARATE FILMS  
Thickness and color of multilayer..... 325
- STEEL. *See also* Boiler Corrosion, Corrosion, Creep of Metals, Fatigue of Metals, Metal Rolling, Metallurgy, Springs.  
Creep strength of (D)..... 49  
Modulus of elasticity and coefficient of expansion of carbon steel..... A-23, (D) A-185  
Observations on yield point of low-carbon steel..... 581  
Relaxation tests on..... 543  
S.A.E. 3140, cutting speed and tool life... 315
- STEEL INDUSTRY  
By-product fuels in..... 665  
Process-heat requirements in a steel plant in relation to by-product-gas supply... 671
- STEEN-JOHNSON, H.  
Turbine-bearing tests (D)..... 162
- STEINBECK, C. E.  
Power and steam plants for oil-refinery service..... 733
- STOKERS  
Lignite-burning steam-generators..... 659  
Performance at Connors Creek plant (D) 61  
Ratel multiple-retort, comparative tests (D)..... 39
- STRAUB, F. G.  
Decomposition of sodium-sulphite solutions at elevated temperatures (D)..... 53
- STRENGTH OF MATERIALS  
Book review..... A-95  
Elastic theory of wood failure..... 259  
Observations on the yield point of low-carbon steel..... 581  
Work strengthening..... 584
- STRESS CORROSION  
Attack on steel in high-capacity boilers as result of overheating due to steam blanketing..... 597
- STRESSES. *See also* Beams, Bolts, Chain Links, Creep of Metals, Flange Joints, Metal Rolling, Photoelasticity, Plates, Rings, Shells, Springs, Structures, Welded Piping Joints.  
Bearing pressures through a slightly waved surface or through a nearly flat part of a cylinder, and related problems of cracks..... A-49  
Centrifugal-machine baskets..... 421  
Centrifugal stresses in rotors..... A-152  
Elastic theory of wood failure..... 259  
Numerical and graphical method of solving two-dimensional stress problems... A-63  
Relaxation stress in bolts (D)..... 73  
Statically indeterminate (BR)..... A-43  
Stress concentration in T-heads..... A-153  
Stress concentration in transverse grooves of two-pole generator rotors..... A-151
- STRONG, H. W.  
Combustion of pulverized coal (D)..... 61
- STROWGER, E. B.  
Operating methods and problems of a combined hydro- and steam-electric system..... 89, (D) 555
- STRUCTURES  
Buckling, elastic stability of structures (BR)..... A-47  
Statically indeterminate frameworks (BR)..... A-40  
Statically indeterminate stresses (BR).... A-43  
Theory of modern steel structures (BR).... A-41  
Theory of statically indeterminate (BR).... A-40
- SULLIVAN, W. A.  
Atomization of oil by small pressure-atomizing nozzles..... 373
- SUPERCHARGING  
Of Diesel-electric locomotives (D)..... 38
- SUPERHEATED STEAM  
Effect of, on equipment..... 383  
Temperature control of (D)..... 63
- SURFACE HARDENING  
Hardness at various case-hardening depths of heat-treated steels..... 340
- T  
T-HEADS  
Stress concentration in..... A-153
- TAFF, W. O.  
Decomposition of sodium-sulphite solutions at elevated temperatures (D)..... 53
- TANKERS. *See* Ships.
- TAYLER, T. C.  
Combustion of pulverized coal (D)..... 61
- TEMPERATURE  
Effect of high temperatures and pressures on cast-steel venturi tubes..... 247  
Wet-bulb, New York City observations... 26
- TEMPERATURE CONTROL AND CONTROLLERS. *See* Automatic Control.
- TEMPERATURE INDICATORS AND RECORDERS  
Pressure-type thermometer systems (D).... 357
- TEMPERATURE MEASUREMENT  
Methods of measuring furnace temperatures..... 568, (D) 572
- TENNEY, E. H.  
Boiler furnaces (D)..... 574  
Design of high-capacity boilers (D)..... 166
- TESTING EQUIPMENT  
Bearing-testing machine..... A-110, A-121  
Chain links, transverse loading..... A-173  
Coefficient of friction with thin oil films... 329  
Coefficient of static friction..... 633  
Creep in tubular pressure vessels..... 240  
Deposition of thin oil films from oil fog... 326  
Dynamic balance..... A-1, (D) A-131  
Expansion forces in model pipe bends..... A-21, (D) A-185  
Flow of gases, effect of pulsations on..... 309  
Flow of water through nozzles..... 233  
Friction of steam and water flow in pipes A-11  
Helicopter rotor..... 186  
Oil-spray characteristics..... 373  
Pitot tubes..... 477  
Pressure effect on venturi tubes..... 248  
Pressure vessels (tubes)..... 517  
Relaxation-test..... (D) 72, 545, 551  
Springs..... 626  
Stereophotographic measurements on flapping of blades of aircraft lifting rotors..... 183  
Wear-testing machines..... 335
- TESTING MATERIALS  
Effect of speed of stretching and rate of loading on yielding of mild steel (D).... A-89  
Resistance to relaxation at high temperature..... 543  
Some observations on yield point of low-carbon steel..... 581  
Two-load method of determining average true stress-strain curve in tension..... A-156
- TEXTILE MACHINERY  
Distribution of woolen and worsted machinery..... 251
- TEXTILES  
Materials used by woolen-and-worsted industry..... 255  
Twenty years of machine activity in the woolen-and-worsted industry..... 251
- THATCHER, C. G.  
Calculation of steam-turbine reheat factors (D)..... A-139  
Reheat factors for expansions of superheated and wet steam (D)..... A-140
- THERMODYNAMICS  
Book review..... A-96  
And heat (BR)..... A-42
- THERMOMETERS. *See* Temperature Indicators and Recorders, Pressure-Responsive Elements.
- THOMA PARAMETER  
For cavitation in hydraulic machines.... 17
- THORSON, A. W.  
Combustion of pulverized coal (D)..... 62
- THRALL, R. M.  
Geometry of determinantal loci (BR).... A-191
- TICHOVINSKY, L. M.  
Boundary friction in bearings at low loads..... A-109  
Tests of a 7 by 10 1/2-in. bearing at 3600 rpm (D)..... 162  
Wear in lubrication problems..... 335
- TIGER, HOWARD L.  
Carbonaceous zeolites—an advance in boiler-feedwater conditioning (D)..... 159
- TORSION  
Creep, elastic hysteresis, and damping in bakelite..... A-79
- TRANSFORMERS  
Noninflammable cooling medium used (D)..... 289
- TRANSITE PIPE  
Modulus-of-elasticity, water hammer, pressure-time diagrams..... 11, (D) 451
- TRANSMISSIONS  
Szekely variable-speed..... 420
- TREIBER, O. D.  
Five years' progress of oil and gas power (D)..... 594

- TUBES.** See also Boiler Tubes, Steam Condensers.  
Effect of holes in bursting pressure of (D) 516
- TUCKERMAN, L. B.**  
Stress model of an airship structure (D) A-33
- TURBINE CYLINDER JOINTS**  
Design of (D) A-31
- TURBINES.** See Hydraulic Turbines, Steam Turbines.
- TURBOGENERATORS**  
Effect of size on cost per kw 274  
Some applications of photoelasticity in turbine-generator design A-151
- TURBULENCE.** See Flow of Liquids.
- TUVE, G. L.**  
Income versus production (D) 48
- V**
- VALVES**  
C.I. gate, test to destruction (D) 174  
Design of flanged joints for valve bonnets (D) 71  
High-temperature steam experience 383  
Hydraulic check 5, (D) 450  
Hydraulic emergency shutoff (D) 75  
Effect of operation after pipe failure (D) 75  
Hydraulic relief 13, (D) 451  
On pumping lines of Colorado River Aqueduct 121  
Steam-pressure reducers 278
- VAN BRENT, JOHN**  
Design of high-capacity boilers (D) 163
- VAN DUZER, R. M., JR.**  
High-temperature-steam experience at Detroit 383
- VECTORSCOPE** 403
- VENTRES, L. H.**  
Atomization of oil by small pressure-atomizing nozzles 373
- VENTURI METERS.** See Fluid Meters.
- VIBRATION.** See also Water Hammer.  
Analysis of, with the Vectorscope 403  
Book review A-93  
Crankshaft, balancing machine A-1, (D) A-131  
Design data on A-86, A-127  
Dynamic balance coefficient 34, (D) 460  
Elastic engine supports 31, (D) 460  
Engine unbalance for various crank arrangements 34, (D) 460  
Geometric interpretations of the method of successive approximations (D) A-33  
Mathematical-machine determination of the vibration of accelerated unbalanced rotor A-145  
Resonance curves for nonharmonic vibrations in structures (D) A-91  
Resonance in pressure conduits 109  
Rotor-unbalance determination A-1, (D) A-131  
Systems with rotary inertia (D) A-36  
Theory of elastic engine supports 31, (D) 460  
Torsional, in bakelite A-79  
Unbalanced locomotive driving wheels A-177  
Vibration problems in engineering (BR) A-94
- VIGNE, ALBERT**  
Oil-bath-lubricated railway bearing (D) 271
- VINCENT, H. S.**  
Drafting of steam locomotives (D) 455
- VON KÁRMÁN, TH.**  
Analogy between fluid friction and heat transfer 705
- VROOM, R. C.**  
Combination oil-and-gas burners (D) 267  
Power and steam plants for oil-refinery service (D) 739
- W**
- WAGNER, WALTER C.**  
Application of temperature controllers (D) 363
- WAHL, A. M.**  
Analysis of effect of wire curvature on allowable stresses in helical springs A-25, (D) A-188  
Die Federn—ihre Gestaltung und Berechnung (BR) A-48  
Stresses in helical compression springs (D) 648  
Transverse deflection of helical springs (D) 630
- WARDEN, H. M.**  
Oil-bath-lubricated railway bearing (D) 270
- WARREN, G. B.**  
High-temperature-steam experience (D) 400  
Power and steam plants for oil-refinery service (D) 739
- WATER**  
Relation of pH value to temperature 287
- WATER COOLERS.** See also Cooling Towers.  
Evaporative-radiator type 29, (D) 452
- WATER HAMMER**  
Air chambers for discharge pipes (D) 445  
Analysis of, in a pumping plant of the Colorado River Aqueduct 117  
Operation of emergency shutoff valves in pipe lines (D) 75  
Remedies for, in pumping systems 5, (D) 450  
Special valves for 5, (D) 450  
Resurge phase of (D) 440  
Speed of pressure wave in Transit pipe 11, (D) 451  
Theory of resonance in pressure conduits 109
- WATER TREATMENT.** See also Boiler Corrosion, Feedwater Treatment.  
Chlorination of condenser cooling water (D) 651
- WATERS, E. O.**  
Determination of the expansion forces in piping by model test (D) A-187  
Flanged joints for valve bonnets (D) 73  
Tests of heat-exchanger flanges (D) 78
- WATSON, R. M.**  
Cavitation characteristics of centrifugal pumps described by similarity considerations 17
- WEAR**  
In lubrication problems 335  
Indentation method of measuring (D) 344  
Methods and equipment for determining resistance to wear, tests 335  
Resistance to, of heat-treated steels 340
- WEBB, R. D.**  
Pressure-type thermometer systems (D) 357
- WEDGES**  
Theory of A-124
- WELDED PIPING JOINTS**  
Methods, tests, stresses (D) 167
- WELDING**  
Gun rupture due to 191
- WELDING FITTINGS**  
For piping, tests (D) 167
- WELLANDER, H. H.**  
Combination oil-and-gas burners (D) 267
- WELLER, R.**  
Calculation of stresses within the boundary of photoelastic models A-71
- WERTHEIM, F. E.**  
Stresses in a welded pipe connection (D) 175
- WESTERGAARD, H. M.**  
Bearing pressures and cracks A-49
- WHITE, ALBERT E.**  
Changes in a high-pressure drum to eliminate recurrence of cracks due to corrosion fatigue 507  
High-temperature-steam experience (D) 400
- WHITE, W. M.**  
Errors of pitot tubes (D) 503
- WIEBUSCH, C. F.**  
Spring clutch A-103
- WILBUR, JOHN B.**  
Statically indeterminate frameworks (BR) A-40
- WILKINSON, P. H.**  
Five years' progress of oil and gas power (D) 593
- WILLIAMS, F. S. G.**  
Stresses in a welded pipe connection (D) 175
- WILSON, A. L.**  
Burning various types of oil-refinery fuels 699
- WINLOCK, JOSEPH**  
Some observations on the yield point of low-carbon steel 581  
Yielding of mild steel (D) A-90
- WINTERROWD, W. H.**  
Balancing reciprocating weights in steam locomotives (D) 536
- WISLICENUS, G. F.**  
Cavitation characteristics of centrifugal pumps described by similarity considerations 17
- WITHINGTON, SIDNEY**  
Motive-power characteristics and light-weight equipment (railroads) (D) 437
- WOHLBERG, W. J.**  
Boiler furnaces (D) 574  
Energy distribution in the pulverized-coal furnace, addenda and corrections 263
- WOOD**  
Elastic theory of wood failure 259  
Specific gravity of 140
- WOOD, E. A.**  
Lignite—a grate-fired fuel of the future in the Southwest (D) 663
- WOOD, W. D.**  
Application of automatic control to continuous processes (D) 358
- WOODWORKING**  
Experiments in planing hardwoods 139
- WOODWORKING MACHINERY**  
Index of orders received 146, (D) 464  
Obsolescence in 145, (D) 464
- WOOLEN INDUSTRY.** See Textiles.
- WOOLRICH, W. R.**  
Lignite—a grate-fired fuel of the future in the Southwest (D) 663
- WORK STRENGTHENING.** See Strength of Materials.
- WORSTED INDUSTRY.** See Textiles.
- WYLIE, C. R., JR.**  
Numerical and graphical method of solving two-dimensional stress problems A-63
- Y**
- YATES, H. G.**  
Reheat factors for expansions of superheated and wet steam (D) A-143
- YELLOTT, J. I.**  
Friction coefficients for compressible flow of steam (D) A-135
- YERZLEY, F. L.**  
Mechanical characteristics of rubber (D) 463  
Theory of elastic engine supports (D) 461
- YOUNG, DANA**  
Clamped rectangular plates with central concentrated load A-114
- YOUNG, E. G.**  
Balancing reciprocating weights in steam locomotives (D) 537  
Drafting of steam locomotives (D) 453
- Z**
- ZENER, C.**  
Method of calculating energy losses during impact A-67
- ZEOLITES**  
Feedwater conditioning (D) 159
- ZUCKROW, M. J.**  
Application of automatic control to continuous processes (D) 359  
Application of temperature controllers (D) 364  
Automatic control in the oil industry (D) 350